FMC CORPORATION

POCATELLO, IDAHO

WORK PLAN FOR THE EASTERN MICHAUDS (EMF) OFF-PLANT OPERABLE UNIT (OU) HEALTH AND SAFETY PLAN

August 2009

Prepared for use by MWH employees working on the EMF Off-Plant OU site while performing tasks under the Off-Plant Surface Soil Radionuclide Investigation Work Plan scope of work.

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LIST OF ACRONYMS

ACGIH	American Conference of Governmental Industrial Hygienists
AIDS	Acquired Immune Deficiency Syndrome
ANSI	American National Standards Institute
APR	air-purifying respirator
CFR	Code of Federal Regulations
CIH	Certified Industrial Hygienist
COC	constituents of concern and chain of custody
COPC	constituents of potential concern
CPR	cardiopulmonary resuscitation
CRZ	Contamination Reduction Zone
CSP	Certified Safety Professional
DAC	derived air concentration
EKG	electrocardiogram
EMF	Eastern Michaud Flats
EPA	(U.S.) Environmental Protection Agency
FEF	forced expiratory flow
FEV	forced expiratory volume
FMC	FMC Corporation
HASP	Health and Safety Plan
HAZWOPER	Hazardous Waste Operations and Emergency Response
HEPA	high-efficiency particulate air
GPS	global positioning system
IDLH	immediately dangerous to life or health
IIPP	illness and injury prevention program
JHA	job hazard analysis
Pb-210	lead-210
mrem	millirem
MSDS	Material Safety Data Sheet
MSHA	Mine Safety and Health Administration
NaI	sodium iodide
NIOSH	National Institute for Occupational Safety and Health

NPL	National Priorities List
OEL	occupational exposure limit
OSHA	Occupational Safety and Health Administration
OSO	On-Site Safety Officer
OU	operable unit
PEL	permissible exposure limit
PPE	personal protective equipment
PSO	Project Safety Officer
P_4	elemental phosphorus
Ra-226	radium-226
RCRA	Resource Conservation and Recovery Act
REL	recommended exposure limit
SCBA	Self-Contained Breathing Apparatus
SFS	Supplemental Feasibility Study
SOP	standard operating procedure
SRI	Supplemental Remedial Investigation
SSO	Site Safety Officer
TLV	threshold limit value
TWA	time-weighted average

1.0 SITE-SPECIFIC HEALTH AND SAFETY PROCEDURES

1.1 INTRODUCTION

This Health and Safety Plan (HASP) establishes the responsibilities, requirements, and procedures for the protection of MWH field team members during sampling at the Eastern Michaud Flats (EMF) Superfund Site in Pocatello, Idaho. The purpose of this plan is to provide the field team with a safe working environment during field activities. Specifically, the HASP is developed to prevent and minimize personal injuries and illnesses and physical damage to equipment, supplies, and property. This HASP will be re-evaluated if site conditions change, updates are required or when the scope of work changes. The field effort for this scope of work is intended to take approximately 1 to 2 months beginning in fall 2009 and ending by winter 2010. The overall scope of work for the investigation is found in the Eastern Michaud Flats Superfund Site Off-Plant OU Supplemental Surface Soil Radionuclide Investigation Work Plan (MWH, July 2009).

The Occupational Safety and Health Administration (OSHA) requires employers and employees involved in CERCLA investigation and clean-up activities to comply with Title 29 (OSHA) of the Code of Federal Regulations, Part 1910, Section 120 (29 Code of Federal Regulations (CFR) 1910.120), Hazardous Waste Operations and Emergency Response (HAZWOPER). OSHA has also included the HAZWOPER standard under the construction safety orders under 29 CFR 1926.65. This document has been designed to meet Federal OSHA standards which are applicable in the State of Idaho.

The information in this HASP is provided solely for the protection of the health and safety of MWH employees and to establish minimum health and safety requirements for subcontractors working under the direct supervision and control of MWH on this project. MWH assumes no liability for, or responsibility to, any other parties for the accuracy or completeness of the information contained herein for any use or reliance upon this HASP by any other party. MWH subcontractors are to independently evaluate this HASP to determine what additional health and safety safeguards may be necessary or appropriate to protect their employees and others within the context of their own scope of work.

Working conditions may necessitate modification of this plan. Except in emergency situations, no deviations from this plan may be implemented without the prior notification and approval of the designated MWH Project Safety Officer (PSO) and/or MWH Project Manager.

This HASP is composed of two sections. Section 1.0 addresses site-specific safety and health issues. This section includes a site description and contaminant characterization, a safety and health risk or hazard analysis for each task (including chemical, physical, and biological hazards), monitoring requirements and action levels for upgrading personal protective equipment (PPE) or evacuating the site, and emergency assistance information. Section 2.0 includes general safety and health procedures common to all MWH field efforts at any site. This section describes the roles and responsibilities of field and office personnel with respect to safety and health, safety training requirements, medical surveillance program, descriptions of different levels of PPE, and standard safety procedures such as safety inspections, emergency response planning, hazard communication, and spill containment. Section 2.0 is used for all MWH projects and, therefore, may reference some activities not applicable to this project.

The contents of this plan are written to include MWH employee activities while on site. MWH subcontractors are required to prepare their own HASP to work under while performing activities on site.

The Site Safety Officer (SSO) is the on-site person responsible for the safety of all members of the MWH field team, and is responsible for implementing this safety plan on site. The SSO has the authority to remove from the site any person who refuses to comply with this plan, or whose behavior endangers their own or other people's safety. All persons covered by this plan will be required to sign a personal acknowledgment form signifying that he/she has read and will abide by the plan. Should the SSO become aware that a subcontractor is not following their HASP, he will notify the subcontractor and require that the subcontractor begin immediate corrective action.

The health and safety coordinator for MWH's Salt Lake office or his designee may conduct site safety audits. These audits will be to check for conformance with the site safety plan. Findings will be written up and discussed with the Project Manager and SSO to ensure that any deficiencies are corrected.

1.2 SITE DESCRIPTION AND OVERVIEW

This section presents the general EMF Site description, background, and regional physical setting.

1.2.1 Facility Setting and History

The EMF Site is located in southeast Idaho, approximately 2.5 miles northwest of Pocatello, Idaho. The EMF Site was listed on the National Priorities List (NPL) on August 30, 1990. The EMF Site includes two adjacent production facilities, a former FMC Corporation elemental phosphorus processing plant that ceased operation in 2001 and a phosphate fertilizer processing facility operated by the J.R. Simplot Company. The EMF Site encompasses both the FMC and Simplot plants and surrounding areas affected by releases from these facilities. FMC, Simplot and EPA entered into a Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) Administrative Order on Consent (AOC) in May 1991 under which the companies agreed to conduct a Remedial Investigation/Feasibility Study (RI/FS) for the site. During the RI/FS the site was divided into three "Subareas:" 1) the FMC Subarea, consisting of the FMC plant and other FMC-owned properties at the site; 2) the Simplot Subarea, consisting of the Simplot plant and other Simplot-owned properties at the site; and 3) the Offsite Subarea, consisting of the remainder of the site. EPA changed these designations to the FMC Plant OU, the Simplot Plant OU, and the Off-Plant OU after its June 1998 *Record of Decision for the EMF Site* (*1998 ROD*, EPA, 1998).

The Off-Plant OU includes urban commercial and residential areas, agricultural areas, and areas of rangeland for cattle grazing within the Fort Hall Indian Reservation and Bureau of Land Management (BLM) lands. As stated in the *1998 ROD*, the Off-Plant

OU was divided into three areas, by reference to the three types of remedial action selected by that ROD:

- Areas Subject to Land Use Controls
- Areas Subject to Fluoride Monitoring
- Areas Subject to Company Monitoring for Residential Development

The areas subject to land use controls are the focus of this additional investigation. For purposes of this Work Plan, seven (7) separate DUs within the Off-Plant OU were selected based on the areas subject to land use controls. The DUs are located in the areas where radionuclide activities in surface soils exceeded the 10-4 incremental cancer risk level based on data collected during the RI.

Property located within the Off-Plant OU Land Use Control Area north of I-86 has been divided into five (5) DUs.

Decision Unit 1 – City of Pocatello Property #1

This DU (46 acres) is entirely located on property owned by the City of Pocatello. The City uses this land for land application of sewage sludge from the City's POTW and leases the property for agricultural production currently consisting of wheat and/or hay crops.

Decision Unit 2 – City of Pocatello Property #2

This DU (45 acres) is located to the east of DU 1 and is entirely located on property owned by the City of Pocatello. The City uses this land for land application of sewage sludge from the City's POTW and leases the property for agricultural production currently consisting of wheat and/or hay crops.

Decision Unit 3 – City of Pocatello Property #3

This DU (37 acres) is located to the north of DU 2 and is entirely located on property owned by the City of Pocatello. The City uses this land for land application of sewage sludge from the City's POTW and leases the property for agricultural production currently consisting of wheat and/or hay crops. This DU is adjacent to but does not include the active sand and gravel operation to the north.

Decision Unit 4 – Rowland Property #1

This DU (39 acres) is located to the north of the Chevron Tank farm and is located on property owned by Rowland's Inc. and/or (b) (6) . The property is used for agricultural production currently consisting of potatoes, wheat and/or hay.

Decision Unit 5 –Rowland Property #2

This DU (33 acres) is located to the east of the Chevron Tank farm and is located on property owned by Rowland's Inc. and/or (b) (6) The property is used for agricultural production currently consisting of potatoes, wheat and/or hay.

Two (2) additional DUs are located immediately south of I-86. These two (2) DUs are southwest of the FMC Plant OU and are located in a second area that was identified in the 1998 ROD as exceeding the 10-4 excess cancer risk for radium-226 as shown on Figure 2.

Decision Unit 6 – Southwest Quadrant #1

This DU (56 acres) is located partially on property owned by the Shoshone-Bannock Tribes (SBT) and partially on property owned by (b) (6) The portion owned by the SBT is primarily unused sagebrush steppe and the portion owned by (b) (6) is used for agricultural production currently consisting of potatoes, wheat and/or hay.

Decision Unit 7 – Southwest Quadrant #2

This DU (57 acres) is located partially on property owned by the Shoshone-Bannock Tribes (SBT) and partially on property owned by (b) (6) . The portion owned by the SBT is primarily unused sagebrush steppe and the portion owned by (b) (6) is used for agricultural production currently consisting of potatoes, wheat and/or hay.

1.2.2 Overview of Tasks to be Performed

This HASP addresses tasks needed to meet the scope of work for the Off-Plant OU, as described in the Eastern Michaud Flats Superfund Site Off-Plant OU Supplemental Surface Soil Radionuclide Investigation Work Plan (MWH, July 2009).

Specific field tasks will include:

- collection of samples and analysis by a fixed laboratory for the following:
  - radiometric levels (uranium-238, radium-226, lead-210)

Sampling will be performed to determine the potential human health risk of seven (7) decision units (DUs) that may have been impacted by EMF activities.

1.3 OFF-PLANT OU UNIQUE SITE-SPECIFIC CONDITIONS, ISSUES, AND REQUIREMENTS

1.3.1 Access to Private Lands

All of the Off-Plant OU DUs are located on private property as identified in the Off-Plant OU Supplemental Surface Soil Radiological Investigation Work Plan. Before accessing any of the DUs for locating or collecting samples, permission to access the property will be obtained by FMC. FMC or MWH will communicate with the property owner prior to sample collection and will notify the property owner when sample collection is

completed. Field team members should always honor the rights and wishes of the property owners based on the access agreements. Minimal disturbance to the property due to driving to and from the property, locating samples, and collection of samples should be maintained at all time. Field team members should have identification or business cards and copies of access agreements with them while sampling on private property. Any questions posed by the property owners to the field team members should be directed to the MWH or FMC project manager.

1.3.2 City of Pocatello Land Application of POTW Sludge at DUs 1, 2 and 3

Decision Units (DUs) 1, 2, and 3 for the Off-Plant OU Surface Soils Radiological Investigation are owned by the City of Pocatello. These land parcels are used for land application of sewage sludge from the City of Pocatello's publically owned treatment works (POTW). The City leases the property for agricultural production currently consisting of wheat and/or hay crops. The sewage sludge applied to these DUs may contain low levels of constituents of concern (COCs) such as metals and pathogens. The health and safety risks from COCs found in sewage sludge will be addressed similarly to the risk from other potential COCs at the Off-Plant OU and FMC Plant Site (e.g., radionuclides). Procedures to be followed when working on these DUs is outlined in Section 1.6.5.

1.4 FMC PLANT SITE UNIQUE SITE-SPECIFIC CONDITIONS, ISSUES, AND REQUIREMENTS

MWH personnel will enter the FMC Plant Site throughout field work for the purpose of mobilization, safety meetings, equipment decontamination, and composite sampling activities. The following is a discussion of unique site conditions and requirements for work at the FMC Plant Site. Should these conditions change, this plan will be amended to include safety procedures for conducting the work.

1.4.1 Site Security

While the FMC facility is no longer active and most of the buildings removed, site access is restricted and tightly controlled by FMC. To enter the facility, contractors and subcontractors must sign in and fill-out necessary paperwork before entering the site through a locked gate at the main entrance. To exit the facility, contractors and subcontractors must sign out before exiting the site through the locked gate at the main entrance. FMC site personnel will be notified daily and kept informed by telephone or in person on work progress, type of work to be completed, area where crews are working and the number of site workers. Site workers will have two-way radios to maintain contact with FMC site personnel as well as other site workers to maintain emergency contact while working at FMC. Cellular telephones will be carried by site workers to maintain emergency contact with the FMC OSO and emergency services.

1.4.2 FMC Plant Safety Requirements

While on FMC property, all MWH and subcontractor's field personnel are to become familiar with the FMC site and obey FMC-specific rules, safety standards and requests. For example:

- All site workers may be randomly tested for alcohol and drugs at the request of FMC. Those refusing to submit to testing, or who fail the alcohol and drugs tests will not be permitted on site or will be asked to leave the site.
- All vehicles entering the FMC site are subject to search.
- Smoking is not allowed outside of the designated smoking areas.
- Active railroad tracks are crossed while entering and exiting the FMC facility. Crossing arms are present at both sides of the railroad tracks to stop traffic from crossing the railroad tracks when trains are approaching the intersection. At no time are vehicles allowed to cross the railroad tracks when the crossing arms are down or are moving down. Additionally, all vehicles entering and

exiting the site must come to a complete stop and the diver must check for approaching trains in both directions before they drive across the railroad tracks.

- Obey the posted speed limit in all areas of the plant. If no posted signs are present, traveling at 20 miles per hour or less is recommended. Personnel must drive safely and be aware of other vehicles, equipment and foot traffic moving throughout the facility.

- Field personnel may be required to wear hard hats, safety glasses/goggles, hearing protection (if required for specific tasks), steel-toed safety shoes that extend to above the ankle, long pants, and short or long-sleeve shirts (depending on the specific task). At a minimum, while working in Level D, personnel shall wear long pants, a shirt (not sleeveless), and steel-toed safety shoes. In addition, each person on site shall have readily available (e.g., in vehicle or carried on their person) a full- or half-faced dust respirator for which the person is properly fit-tested and medically-approved. Note that additional PPE requirements may be encountered when entering exclusion zones within the plant site.

- If an emergency situation occurs at the MWH work site, immediately phone FMC site personnel as well as contacting the local emergency response system. Be prepared to identify the location, nature of the emergency, number of personnel involved, etc. Note that cell telephones may not reach the local emergency response system. Direct telephone numbers have been included in this HASP. It is recommended that emergency telephone numbers be programmed into cellular telephones.

- Personnel operating equipment will be properly trained to operate the equipment. Subcontractors will be required to provide documentation to reflect that the operator has received proper training and is fully qualified to operate the equipment. Persons are not to operate equipment for which they have not been not fully trained.

- Chemicals and materials brought on to the FMC facility that are subject to the OSHA hazard communication standards will be properly labeled to show the hazard classifications, and will have Material Safety Data Sheets (MSDSs) available for review by all on-site personnel and stored on site in a designated area such as the main work trailer.

- Refuse such as spent PPE and other disposable items that may be generated from the investigation will be properly disposed of following Section 7.0 and SOP – 7 found in the *Supplemental Remedial Investigation Field Sampling Plan for the FMC Plant Operable Unit* (MWH, May 2007). All wastes generated by MWH or subcontractors will be subject to waste determination under 40 CFR § 262.11. Wastes will be stored in approved containers and all containers will be properly labeled. The containers will be transported to a designated storage area on site and held pending waste determination and disposition.

1.4.3 Training

All site workers that are assigned to work at the FMC facility will have completed the OSHA 40-hour HAZWOPER standard training (29 CFR 1910.120) and will be current on 8-hour refresher training. Requirements for HAZWOPER standard training is described in Section 2.3 of this plan. In addition, site-specific training will be performed for all MWH personnel and subcontractors when these employees first arrive on site and prior to performing Off-Plant OU work activities at the site. This training will cover all aspects of this Health and Safety Plan, PPE training, unique site hazards, and emergency response information. All training will be documented and maintained in the on-site records.

1.4.4 Communication Systems

Cellular telephones will be used as the primary means of communication between the field team(s), FMC, and off-site MWH personnel. Two-way radios will also be used at

the site to maintain contact between all on site personnel. Effective communication is critical and will be maintained at all times.

1.5 CHEMICAL OR SAFETY ISSUES OF POTENTIAL CONCERN

This section provides information pertaining to the nature and extent of chemical, biological, and radiological hazards at FMC.

1.5.1 Chemicals of Potential Occupation Health Concern

The potential toxic exposure hazard to site personnel associated with chemical contaminants at the site can be assessed by comparison to previously established occupational exposure limits (OELs). The following four types of OELs were considered in the development of this plan:

- Threshold Limit Values-Time Weighted Averages (TLV-TWA) are established by the American Conference of Governmental Industrial Hygienists (ACGIH): The time-weighted average airborne concentration of a substance, for a normal eight-hour workday and a 40-hour week, to which nearly all workers may be repeatedly exposed, day after day, without adverse effect. Certain substances will have a skin notation in the exposure route column. This indicates that the overall exposure to that substance is enhanced by skin, mucous membrane, or eye contact.

- Permissible Exposure Limit (PEL) values are established by OSHA, and are legally enforceable: PELs are similar in concept to TLV-TWAs. The numerical values for the PEL and TLV-TWA for a given compound may be different. In the absence of a PEL for a given substance, OSHA will enforce the lowest published “safe” exposure level.

- REL: Recommended Exposure Limit is the workplace exposure concentration recommended by NIOSH for promulgation by OSHA as a PEL, but is not enforceable as is the OSHA PEL. In some cases, NIOSH has described time-

weighted average concentrations in terms of 10 hour, rather than 8-hour averages.

- Immediately Dangerous to Life or Health (IDLH) values are established by NIOSH : The maximum airborne concentration of a substance which one could escape within 30 minutes without escape-impairing symptoms or any irreversible health effects.

Table 1-1 identifies the OEL values for chemicals of concern (COCs) and chemicals of potential concern (COPCs) at the Off-Plant OU facility. Refer to Table 1-1 for a list of COC for each investigation area. Routes of exposure and symptoms of acute exposure are also summarized. The vapor pressure is provided in order to identify compounds that are volatile and thus can pose an air hazard in the absence of dust. All site activities will comply with the exposure standards mandated by OSHA, and will adhere to ACGIH TLV-TWA recommendations when they are more protective of employee health.

1.5.2 Physical Hazards

Potential physical hazards during field operations could include heat or cold stress and severe weather, excessive noise, lifting injuries, and slipping, tripping, or falling. Hazards are also associated with drilling and excavation, including underground and overhead utilities, and being struck by or caught between moving parts. Potential physical hazards are discussed in Sections 1.5. Methods to assess and control these hazards are presented in Sections 1.5 and 2.14.

1.5.3 Biological Hazards

Section 2.13.2 is a discussion of general biological hazards at the site, including rattlesnakes, wild animals, spiders, and biting insects including ticks.

1.6 JOB HAZARD ANALYSIS

A written Job Hazard Analysis (JHA) is an integral part of MWH's overall Accident Prevention Plan. JHAs should be amended, as necessary, to address new hazards encountered during field activities, or when control measures are changed to more effectively reduce potential risks associated with worksite activities. Table 1-2 presents a general JHA for each field task.

1.6.1 Radiological Hazards

The FMC Plant site and potentially the Off-Plant OU areas contain low concentrations of radioactivity in waste on the site. A Radiation Protection Program has been developed was implemented during the 2007 FMC Plant Site SRI activities. Data collected as part of that plan showed that there would be minimal occupational exposure to MWH employees and subcontractors working in the FMC Plant Site. This assessment was based on external exposure data and air monitoring data.

1.6.2 Soil and Sediment Sampling

Soil and sediment sampling will be completed using a variety of sampling methods. All sampling equipment will be decontaminated prior to sampling. Surface soil samples will be collected using shovels or trowels, and placed into the laboratory-provided sampling containers. During drilling and hand augering, soil samples will be collected from split-spoon samplers, and placed into the laboratory-provided sampling containers.

1.6.3 Heat Stress

The stress of working in a hot environment can cause a variety of illnesses including heat exhaustion or heat stroke; the latter can be fatal. PPE (i.e., EPA Level A, B or C protection) can increase heat stress significantly. To reduce or prevent heat stress, frequent rest periods and beverage consumption to replace body fluids and salts may be

required. It should be noted that heat stress can also occur in people wearing regular, permeable work clothing.

Quantitative physiological monitoring for heat stress also may be conducted. Physiological monitoring for heat stress includes heart rate as a primary indicator and oral temperature as a secondary indicator. The frequency of monitoring depends on the ambient temperature and the level of protection used on-site. Section 2.11.1, Heat Stress, details heat stress monitoring.

1.6.4 Traffic Safety

Where exposed to vehicle traffic, it is necessary for employees on foot to remain aware of vehicle traffic and to wear a high-visibility safety vest. Where MWH or subcontractor employees must block active roadways to perform their work activities, personnel will establish traffic control in accordance with the Department of Transportation Manual on Uniform Traffic Control Devices, Part IV. (See http://mutcd.fhwa.dot.gov/pdfs/2003/Ch6A-E.pdf or contact the MWH Project Manager for assistance.)

1.6.5 Decision Units Containing Land Applied POTW Solids

Decision Units (DUs) 1, 2, and 3 for the Off-Plant OU Surface Soils Radiological Investigation are owned by the City of Pocatello. These land parcels are used for land application of sewage sludge from the City of Pocatello's publically owned treatment works (POTW). The City leases the property for agricultural production currently consisting of wheat and/or hay crops. The sewage sludge applied to these DUs may contain low levels of constituents of concern (COCs) such as metals and pathogens. The health and safety risks from COCs found in sewage sludge will be addressed similarly to the risk from other potential COCs at the Off-Plant OU and FMC Plant Site (e.g., radionuclides). The following procedures will be followed when working on these DUs:

- Tarps/visqueen may be set on ground for the purpose of staging sampling equipment.

- Personal cleanliness and restrictions on eating, drinking, and smoking will be enforced in the work zones.

- Personal protective equipment (PPE) such as nitrile gloves will be worn during sample locating and collection, as appropriate.

- Samples will be relocated if they fall within an area of freshly applied sewage sludge.

- Engineering controls, such as dust suppression techniques will be used as necessary and sampling will cease based on visual dust levels as determined by the field team leader.

1.7 PERSONAL PROTECTIVE EQUIPMENT (PPE)

1.7.1 Specifications for Level D Ensembles

Based on the nature of contamination and the invasiveness of the field tasks at FMC and the Off-Plant OU, the initial level of PPE for each RU will be Level D. Field personnel will be required to wear hard hats, safety glasses/goggles, hearing protection (if required on specific tasks), steel-toed safety shoes that extend above the ankle, long pants, and short or long-sleeved shirts (depending on the specific task). In addition, each person on site shall have readily available (e.g., in vehicle or carried on their person) a full- or half-face dust respirator for which the person is properly fit-tested and medically-approved. Note that additional PPE requirements may be encountered when entering exclusion zones within the plant site.

Personnel will incorporate the following into the standard Level D ensemble (see Section 2.5.2.):

Coveralls: Standard work uniform of long pants and a long-sleeved shirt.

Gloves: Latex/Nitrile gloves.

Shoes: Steel-toed shoes that extend above the ankle or steel-toed work boots or steel toed rubber or polyvinyl chloride (PVC) boots meeting ANSI or ASTM specifications.

1.7.2 Specifications for Level C Ensembles

If upgrading to Level C becomes necessary for activities at Off-Plant due to the presence dust, personnel will incorporate the following into a modified Level C ensemble (see Section 2.5.3.):

Coveralls: Coated Tyvek or Saranex coverall

Gloves: Inner and outer chemical resistant gloves as specified in Section 7.5 to be used with work gloves and cut resistant gloves.

Shoes: Steel toed rubber or polyvinyl chloride (PVC) boots meeting ANSI or ASTM specifications.

Respirator: Half- or full-face air-purifying respirator with P100 High Efficiency Particulate Air (HEPA) filters for dusts and fumes, to be donned when visible dust or fumes are present. Cartridges are to be changed whenever resistance to breathing is noticeably increased, or daily at a minimum.

Face Shields: Clear face shield that attaches to a hard hat.

1.7.3 Specifications for Level B Ensembles

While not anticipated, if upgrading to Level B becomes necessary for activities at the Off-Plant OU, personnel will incorporate the following into the standard Level B ensemble (see Section 2.5.4.):

Coveralls:	Coated Tyvek or Saranex coverall
Gloves:	Butyl rubber double gloves
Shoes:	Heavy neoprene outer boots or boot covers.
Respirator:	Full-face, supplied-air respirator or self-contained breathing apparatus (SCBA).

Note that this Level B ensemble is not expected to be necessary during the Off-Plant surface soil sampling activities.

1.8 MONITORING REQUIREMENTS

Monitoring is a critical part of the safety program for hazardous waste field activities. This section discusses the exposure monitoring requirements and action levels for upgrading PPE or evacuating the site.

Dust Monitors. The DUs may present an inhalation hazard via dust contaminated with the COCs listed in Table 1-1. Dust monitoring will be performed visually at the site. If any visible dust is present, personnel will either; move upwind from the dust; upgrade their PPE until dust control measures are implemented; or stop work until the visible dust subsides.

1.9 ACTION LEVELS

This section provides a rationale for selecting action levels for site contaminants, for upgrading PPE or evacuating the site.

Dust may contain a variety of COCs at the Off-Plant Operable Unit. Dust monitoring will initially be performed visually. If visible airborne dust is observed, personnel will use a half-face APR with a HEPA respirator cartridge or dust mask that is NIOSH approved.

If a decision is made to implement quantitative dust monitoring, the following methods will be used. Total dust will be monitored as a real-time surrogate to estimate potential exposure, based on soil concentrations observed and listed in Table 1-1. The observed total dust concentrations will be used to evaluate the worker breathing zone exposure nearest to the source. Downwind samples will be collected every 30 minutes. The following limits will be used:

- background to 0.1 mg/m^3 — Continue work.
- > 0.1 mg/m^3 to 1.0 mg/m^3 — Employ dust suppression techniques(water spray). Use Level C full- or half-face APR with P100 HEPA respirator cartridge.
- >1.0 mg/m^3 — Stop work, leave area and upgrade to Level B, or stop work until <1.0 mg/m^3.

1.10 SITE PERSONNEL

Section 2.2 presents the roles and responsibilities of the key personnel involved with health and safety for site activities. The following personnel will fill these roles for this project:

TITLE	NAME	CONTACT NUMBERS
MWH Principal-in-Charge	Mike DeDen	(801) 617-3210 (801) 550-3976 cellular
MWH Project Manager	Marc Bowman	(801) 617-3234 (435) 901-0055 cellular
MWH Project Engineer	Leah Wolf Martin	(970) 879-6260 (208) 301-8063 cellular
MWH Program H&S Manager	Clayton Bock	(312)-831-3000 (312) 952-4236 cellular
MWH Salt Lake City Safety Officer	Jeff Seabolt	(801) 617-3261 (801) 580-2140 cellular
MWH On-Site Safety Officer	Bill Bragdon	(801) 617-3265 (801) 550-7407 cellular
MWH Field Team Leader/Field Supervisor	Bill Bragdon	(801) 617-3265 (801) 550-7407 cellular

1.11 EMERGENCY ASSISTANCE INFORMATION

This section contains emergency telephone numbers for the closest hospitals capable of providing emergency service for hazardous waste site workers, and a map showing the locations of these hospitals. Additionally, telephone numbers are listed for the Poison Control Center, local Police and Sheriff's Department, local Fire Department (including their emergency rescue squad), and MWH management.

1.11.1 Emergency Services

Emergency services (ambulance, etc.) should be obtained by calling emergency services directly if an incident occurs during the Off-Plant sampling activities. In the event of an emergency, FMC or MWH will take the lead role in administering first aid and in coordinating the transportation of injured personnel from the site by ambulance or

helicopter transport. If emergency services are made from the FMC office, 911 can be used. If calling from a cell phone:

Portneuf Medical Center
651 Memorial Drive
Pocatello, ID 83201
Main: (208) 239-1800

The recommended route from the project site to the Portneuf Medical Center is shown on Figure 1-1 and described in the following sentences.

From the FMC facility, travel east along East County Road to US Highway 30. Take immediate right from US Highway 30 to Interstate 86. Travel east on Interstate 86 and take Interstate 15 to the south. Travel south on Interstate 15 to Clark Street, go straight on off-ramp to Center Street. Turn west (right) on Clark Street and travel approximately 1/2 mile to N. 15th Street. Go straight on N. 15th until it turns into Memorial Drive. The Emergency Department is on the right at 651 Memorial Drive.

A copy of the hospital route map will be kept in all site support vehicles; and all site personnel will become familiar with the route and travel time required.

1.11.2 Other Emergency Contact Telephone Numbers

FMC Project Manager: Barbara Ritchie	(215) 299-6700
Poison Control Center	(800) 222-1222
National Response Center	(800) 424-8802
OSHA Regional Center	(800) 321-6742
Power County Sheriff Department (Primary)	(208) 266-2319
Idaho State Police (Alternate)	(208) 236-6066
Fort Hall Police Department (Alternate)	(208) 237-0137
Chubbuck Fire Department (Co-Primary)	(208) 237-3212

Fort Hall Fire Department and EMF District (Co-Primary)	(208) 478-3784
Pocatello Fire Department (Alternate)	(208) 234-6201
MWHA Workers' Compensation Insurance, Auto Accident, or Incident Reporting Information	Woni Steven 303-410-4114 Heather Medina 303-533-1991

2.0 GENERAL SAFETY AND HEALTH PROCEDURES FOR HAZARDOUS WASTE OPERATIONS

2.1 GENERAL SAFETY AND HEALTH POLICY STATEMENT

It is the policy of MWH and the management organization assigned to field projects to provide a safe and healthful work environment for all assigned employees. MWH recognizes that injury, illness, or property/equipment loss impacts each of our lives through suffering and potential disability, as well as through lost wages and productivity.

A fundamental principle of industrial safety and loss prevention is that most accidents that cause injuries or illnesses and property damage are ***preventable***. Examinations of the causes of accidents and industrial illnesses demonstrate that most injuries or illnesses are the result of an unsafe act or condition. MWH recognizes that it is both a moral obligation and a sound business practice to prevent workplace injuries and illnesses. This can be accomplished by recognizing, evaluating and controlling unsafe acts and conditions.

The safety and health program embodied in this portion of each MWH HASP has been developed in accordance with relevant occupational safety and health regulations and requirements, and applies to all field sites and workplaces. Because this section is intended to be applicable to a wide range of sites and conditions, there may be information in this section (e.g., information about hurricanes) that apply to certain areas of the country only.

Safety and loss prevention are a direct responsibility of all levels of management under all projects. Each level of on-site management has the responsibility to provide a safe and healthful work environment. This shall be achieved through strict adherence to the requirements of this site safety and health program and associated addenda.

The MWH PSO and On-site Safety Officers (OSOs), and the subcontractor-designated OSOs will cooperatively implement the requirements of each company's Injury and Illness Prevention Program along with the requirements of this HASP. Management personnel at all levels shall, through personal example, create a work climate in which all assigned employees develop a concern not only for their own safety and health, but also for the safety and health of their fellow workers and the environment. While it is important to instill a sense of empowerment for innovation and efficiency, the knowledge of boundary conditions concerning the safety and health program is vital for all personnel.

The MWH Industrial/Hazardous Waste Operations Group Safety and Health Manager, or designee, will be available for consultation during the field work covered by this HASP.

2.2 SAFETY AND HEALTH ORGANIZATION

The efforts of multiple organizations usually are necessary for completing investigations and remedial objectives associated with hazardous waste site work. Each individual assigned to oversee or conduct field work will be responsible for conducting his/her job in a safe and healthful manner. However, to facilitate the implementation of this safety and health program, it is necessary to assign key responsibilities to specific individuals. Figure 2-1 presents the project organizational structure in relation to responsibilities under the safety and health program.

2.2.1 Roles and Responsibilities

Implementation of the HASP will be accomplished through an integrated effort of the following personnel:

- MWH Principal-in-Charge
- MWH Project Manager

- MWH Project Engineer
- MWH PSO
- MWH Field Team Leader/Field Supervisor
- MWH OSO
- Subcontractor OSO

The roles of key personnel are discussed further in the following subsections.

Principal-in-Charge. As the senior management representative on the project, the Principal-in-Charge is responsible for defining project objectives, allocating resources, determining the management organization, and evaluating program outcomes. Through the Project Manager, the Construction Manager/Engineering Manager, and assigned Project Engineers, the Principal-in-Charge is ultimately responsible for:

- Providing the necessary facilities, equipment, and budget to perform work safely
- Providing adequate personnel and schedule to conduct activities safely
- Ensuring proper review and distribution of all safety and health documents
- Supporting the efforts of on-site management
- Providing appropriate disciplinary action when unsafe acts or practices occur.

Project Manager. In addition to the responsibilities described in the previous section, the Project Manager (PM) and the assigned Construction Manager and/or Engineering Manager have overall responsibility for the performance of their assigned portions of the project in a safe, healthful manner. These individuals are the central points of contact with client representatives. Should a safety and health issue develop in the performance of the contract that requires consultation with the client, they are responsible for

immediately contacting the appropriate client representative and providing guidance in resolving the issue(s).

Project Engineer. In addition to the responsibilities discussed in the previous section, individual Project Engineers are responsible for ensuring that the goals of their assigned tasks are attained in a manner consistent with HASP requirements. They shall coordinate with the PSO and assigned OSOs about the logistics of implementing the HASP in support of all required site activities. Project Engineers also may serve as secondary contacts with client representatives regarding safety and health issues.

Project Safety and Health Officer. The MWH PSO is responsible for preparing and updating the HASP. The PSO shall have and maintain the designation of the CIH or CSP, or shall work under the supervision of a CIH or CSP. The PSO shall ensure that all safety and health program documents comply with all state and local safety and health requirements. If necessary, the PSO can modify the HASP to adjust for on-site changes that affect health and/or safety. Prior to making any formal changes to the HASP, he/she will consult with the PM or client, as necessary. The PSO will coordinate with the OSO(s) on all modifications to the HASPs and will be available for consultation when required. The PSO shall prepare the materials to be used in the training program and ensure that OSOs are knowledgeable in all aspects of the HASP. The PSO may visit the site periodically during the project to evaluate the effectiveness of the safety and health program and compliance with the HASP through inspections and audits. Other responsibilities include:

- Ensuring that medical monitoring, incident reporting, and record keeping meet all federal and state regulatory requirements

- Developing, implementing, and maintaining employee training and medical surveillance programs

- Reviewing and commenting on HASPs prepared by other project personnel

- Participating in professional organizations to obtain and exchange information to keep the safety and health program current

- Monitoring state and federal requirements to maintain the safety and health program in current status.

Field Team Leader and/or Subcontractor Supervisor. The MWH Field Team Leader and any Subcontractor Supervisors are responsible for:

- Becoming knowledgeable about the background of their assigned sites

- Obtaining access to locations where access restriction exist and coordinating site activities with appropriate authorities

- Briefing field team members on their specific assignments and participating in daily "tailgate" safety meetings

- Coordinating with the OSO to ensure that site safety and health issues are being met.

On-Site Safety Officer. The MWH OSO is responsible for facilitating and coordinating the field implementation of the HASP. The OSO is responsible for implementing MWH's *Injury and Illness Prevention Program*; a copy is provided as Appendix A of this HASP. Copies of applicable subcontractor programs will be added to Appendix A or as separate addenda. The OSO also will maintain current American Red Cross certification in cardiopulmonary resuscitation (CPR) and first aid. The OSO has the responsibility and authority to halt or modify any working condition, or remove personnel from the site, if he/she considers conditions to be unsafe. The OSO will be the main contact in any on-site emergency situation, and will direct all field activities involved with safety. Specific tasks assigned to the OSO include:

- Ensuring that all on-site personnel understand and comply with all safety requirements, and that a copy of the HASP is located at each active work zone

- Seeking guidance from the PSO when unanticipated conditions develop and obtaining approved amendments to the HASP before implementing deviations from the existing safety and health program

- Conducting or arranging for air monitoring operations at each site to verify that workers are wearing the appropriate level of PPE

- Ensuring that the specified PPE is available and in use by project team members

- Periodically inspecting protective clothing and health hazard assessment equipment for defects and signs of wear

- Ensuring that health hazard assessment equipment is calibrated and maintained in good working order

- Establishing, enforcing, and documenting decontamination operations for personnel and equipment

- Inspecting and maintaining first-aid kits and other emergency supplies

- Verifying the route to the emergency medical facility and ensuring that the information is posted for all site workers to use

- Participating in accident/incident and near miss investigations

- Controlling the entry and exit points to active work zones

- Confirming each person's ability to perform site work with the PSO or subcontractor company official and maintaining a file of current training and medical surveillance certificates. Enforcing written medical restrictions for site personnel, as necessary

- Conducting and documenting the daily tailgate safety meetings

- Monitoring the field team for signs of thermal stress and fatigue

- Monitoring on-site hazards and conditions

- Conduct periodic inspections to ensure the requirements of the safety and health program and HASP are being followed

- Enforcing the buddy system

- Coordinating with the subcontractor designated on-site safety officer to resolve unsafe behavior and unsafe conditions posed by subcontractor personnel. Dismissing subcontractor personnel when resolution of unsafe acts and conditions fail

- Knowing emergency procedures, evacuation routes, and telephone numbers of the ambulance, local hospital, poison control center, fire department, and police department.

Subcontractor On-Site Safety Officer. The subcontractor's designated OSO is responsible for ensuring that all subcontractor personnel read, understand, and comply with the provisions of the HASP. Additionally, the subcontractor's OSO is responsible for implementing the subcontractor's injury and illness prevention program. Prior to the submission of each HASP, the subcontractor shall submit pertinent safety and health information regarding the subcontractor's activities and equipment. The subcontractor's OSO will ensure that the particular safety and health hazards associated with the

subcontractor's work are made known to all other affected site personnel - this will be accomplished by participating in the daily tailgate safety meetings, or by holding a pre-project briefing. The subcontractor's OSO will be the primary contact for the MWH OSO in cases where subcontractor behavior has been determined to be unsafe and is creating unsafe conditions. The subcontractor's OSO will be responsible for following up on such notices, correcting unsafe conditions, and disciplining unsafe behavior.

Field Personnel. All field staff are responsible for understanding and complying with all requirements of the HASP, and are required to sign acknowledgments to that effect. Field staff will be requested to bring all perceived unsafe site conditions to the attention of the OSO during each daily tailgate safety meeting, or sooner as conditions warrant. During the daily tailgate safety meetings, any subcontractor personnel who will be providing services shall inform the rest of the field team, of any additional hazards posed by the use of their equipment and procedures.

Site Visitors. Visitors may be present at the project site during field activities. These individuals may include MWH and subcontractor management staff, regulatory agency personnel, client personnel, and visitors. These visitors most likely can be accommodated by providing a general viewing area at a safe location in the support zone. The OSO can provide a brief overview of the field activities to the site visitors.

Visitors will remain outside the site exclusion or contamination reduction zone. If unannounced visitors want to gain access to the project site, the OSO should inform the responsible MWH Project Manager or Project Engineer, who shall contact the appropriate client representative to obtain permission or denial of access. If access if approved, the OSO will make arrangements for the proper personal protective equipment (with the exception of respiratory protection) to be used on the project.

2.2.2 Notification Requirements

Unanticipated field conditions may occasionally require modification of the HASP. Client notification and/or approval procedures will depend on actual field conditions. Any personal protective equipment upgrade (Level D to Modified Level D or to Level C) will be reported in the Tailgate Safety Meeting Forms (Appendix C). Minor changes to the HASP to accommodate on-site conditions can be implemented by the OSO upon review and approval of the PSO; this might include slight changes in decontamination and site control procedures.

The PM shall be immediately notified of the following:

- Any required site evacuation based on air monitoring data
- Any fatality or admission of one or more site personnel to the hospital
- Any site physical hazard where continued site work could lead to possible death or permanent injury.

2.2.3 Enforcement of Safe Work Practices in a Multi-Employer Job Setting

Enforcing safe work practices at a multiple employer job setting presents many challenges. Under OSHA, each employer is required to provide a safe and healthful working environment for its employees. Most hazardous waste sites will require that several contractors work simultaneously on different project tasks. In this situation, the activities of one company could cause harm to the employees of another company. It is not possible to present every subtle hazard associated with a particular piece of equipment or process in this HASP. Each company must present the particular safety and health issues associated with each day's activities at the daily tailgate safety meetings.

When conducting site activities, personnel may forget or ignore provisions of the HASP. Personnel noticing deviations from accepted safe work practices will tactfully remind the

affected personnel of the proper procedures. If the deviation continues, the subcontractor's OSO and the MWH OSO will be informed of the circumstances. ***Under no conditions are deviations from safe work practices to be tolerated by anyone on site.*** The subcontractor's OSO and MWH OSO will attempt to correct the unsafe behavior or unsafe conditions at the site. Should this attempt fail, the MWH OSO shall halt site activities and dismiss non-cooperative personnel.

2.3 PERSONNEL TRAINING

2.3.1 General

All personnel who enter a hazardous waste site or construction site must recognize and understand the potential hazards to safety and health associated with clean up operations at the site. It is the intent of this safety and health program to provide every person engaged in on-site activities a level of safety and health training consistent with his or her job functions and responsibilities. Employees working on site exposed to hazardous substances, health hazards, or safety hazards; their supervisors; and management responsible for the site shall, at the time of assignment to the field, meet the OSHA hazardous waste site workers training requirements as stated in 29 CFR 1910.120/29 CFR 1926.65 and like State laws. Workers are categorized as either:

- General site workers, defined as equipment operators, general laborers, and supervisory personnel, engaged in hazardous substance removal or other activities which expose or potentially expose workers to hazardous substances and health hazards.

- Occasional site workers, defined as workers on site occasionally for a specific limited task, such as but not limited to, ground-water monitoring, land surveying, or geophysical surveying, and who are unlikely to be exposed over permissible exposure limits and published exposure limits.

In addition to the OSHA hazardous waste operations and emergency response regulations, there are other ancillary safety and health regulations governing certain training aspects of this project. These include the training requirements specified in:

- "Injury and Illness Prevention Program" (8 CCR 1509 and 8 CCR 3203)
- "Respiratory Protection" (1910.134)
- "Hearing Conservation" (1910.95)
- "Hazard Communication Standard" (1910.1200)
- "Bloodborne Pathogens" (1910.1030)

When a State regulation exists for a standard presented above, the standards of the State regulation shall supersede the Federal equivalent.

2.3.2 Initial Training

Individuals that meet the general site worker requirements will receive 40 hours of off-site instruction, and a minimum of three days actual field experience under the direct supervision of a trained, experienced supervisor. Individuals that meet the occasional site worker requirements will receive 24 hours of off-site instruction and a minimum of one day actual field experience under the direct supervision of a trained, experienced supervisor if all of the following apply:

- Work will be in areas that have been monitored and fully characterized to indicate that exposures are under permissible exposure limits and published exposure limits where respirators are necessary
- Characterization indicates that there are no health hazards or the possibility of an emergency developing.

The on-site managers and individuals responsible for supervising personnel engaged in site work must have at least 8 additional hours of specialized training on managing such operations. This specialized training includes the employer's safety and health program and the associated employee training program, personal protective equipment program, spill containment program, and health hazard monitoring procedures and techniques.

If the employer can show by the employee's work experience and/or training that the employee has had the equivalent of the stated requirements, the employee will be considered as meeting these initial training requirements.

Training elements to be covered in the initial training include:

- Introduction to the governing regulations for safety and health at hazardous waste sites
- Names and roles of personnel responsible for site safety and health
- Safety, health and other typical hazardous waste site operation hazards present at a site
- Use of PPE
- Types and use of equipment used to monitor the breathing zone and work areas of site personnel (i.e., photoionization detectors, combustible gas indicators, colorimetric indicator tube systems, dust meters and noise monitors)
- Work practices by which the employee can minimize risks from hazards
- Safe use of engineering controls and equipment

- Medical surveillance program requirements, including recognition of symptoms and signs that might indicate overexposure to hazards

- Decontamination set-up and procedures

- Emergency response planning including proper PPE and equipment selection and use for emergency response

- Confined space entry procedures

- Spill containment program elements

- General principles of toxicology and review of the major categories of typical hazardous waste site contaminants

- General industrial hygiene principles of recognition, evaluation and control of safety and health hazards.

2.3.3 Refresher Training

All site workers, whether general, occasional, or supervisory, shall complete 8 hours of off-site refresher training annually on the items covered in the 40 hour or 24 hour initial training program.

2.3.4 Site-Specific Training

Site-specific training will be provided by FMC for all MWH employees and subcontractors who as scheduled to be on site prior to the job start-up. All MWH employees and subcontractors who are scheduled to be on site require a current respiration fit test certificate stating that they are qualified to use a full or half-faced respirator. All MWH employees and subcontractors who are scheduled to be on site will meet the requirements of 29 CFR 1910.120/29 CFR 1926.65.

The PSO and/or the OSO, or designee will conduct initial site-specific training prior to job start-up to ensure that MWH employees and subcontractors have a thorough understanding of the HASP, standard operating procedures (SOPs), and physical, safety, biological, radiological, and chemical hazards of the site. This training will be conducted as necessary when new employees enter the exclusion and contamination reduction zones. Topics addressed in the initial safety and health training will include:

- Names of employees and others responsible for safety and health
- Employee rights and responsibilities under OSHA
- Acute and chronic effects of exposure to hazardous substances that may be present, the potential routes of exposure and symptoms of exposure for these substances, the PEL and IDLH values, and the level of personal exposure that can be anticipated
- Air monitoring procedures, including the functions, limitations, use, and maintenance of monitoring equipment
- Discussion of action levels for changing site PPE or evacuating the site
- Review of the HASP
- Contractor injury and illness prevention programs
- SOPs prepared specifically to address various aspects of this project
- Engineering controls, such as dust suppression techniques
- Personal cleanliness and restrictions on eating, drinking, and smoking
- Personal protective equipment (PPE)

- Medical surveillance program
- Decontamination
- Emergencies and review of emergency procedures and facilities, including bloodborne pathogens and universal precautions
- Fire prevention measures
- Site control measures
- Spill containment program for chemical handling locations
- Proper use of heavy equipment and machinery
- Other physical hazards such as slip/trip/falls, noise, electrocution, being struck by something and being caught in or between something
- Heat and/or cold stress prevention, treatment, and monitoring.

The OSO will maintain documentation that each site worker has successfully completed this training program. Each site worker must sign and date a Personal Acknowledgment Form (Appendix B).

2.3.5 Daily Tailgate Safety Meetings

All MWH personnel and subcontractors will be required to attend the daily tailgate safety meeting. This meeting, conducted by the OSO, will cover specific safety and health issues, site activities, changes in site conditions, and a review of topics covered in the initial safety and health meeting as they apply to daily activities. Issues addressed in the daily tailgate meeting will be documented on a form, which will be signed by the

personnel who attend and retained by the OSO. A copy of a form that can be used to document the daily tailgate safety meetings is presented in Appendix C.

2.3.6 Injury and Illness Prevention Program (IIPP)

The injury and illness prevention program (IIPP) must be in written form and communicated to all employees. The purpose of IIPP training is to prevent accidents and minimize risk to on-site workers. The MWH IIPP is summarized in Section 2.8.3. and provided in its entirety in Appendix A of this document; IIPPs from subcontractors will be added to Appendix A, or added as an addenda, after their subcontractor agreements are negotiated.

2.3.7 Respiratory Protection

Respiratory protection training is included in the initial 40-hour and 8-hour update training specified in Section 2.3.3. The regulations governing respiratory protection can be found in Federal OSHA 29 CFR 1910.134. Site-specific training will be provided for the use of air purifying respirators issued for contaminants of concern, and any supplied air respirators issued for emergency response and/or egress. Section 1.0 includes specific respiratory protection requirements for individual work tasks.

2.3.8 Hazard Communication

In accordance with the OSHA Hazard Communication Standard (29 CFR 1910.1200), copies of all material safety data sheets (MSDSs) for hazardous chemical materials brought onto any project site by any of the project contractors and used during site operations, or found on-site, will be available in the site office or from the OSO. In particular, the MWH standard hazard communication program will be available for review from the OSO. General hazard communication training will be conducted either during the hazardous waste operations and emergency response training or by each

employer's safety contact, in accordance with 29 CFR 1910.20, "Access to employee exposure and medical records."

2.3.9 Bloodborne Pathogens and CPR/First Aid

Personnel assigned to conduct field work for this project do not conduct first aid or CPR as a primary job function. Rather, selected employees have been trained in CPR and first aid for emergency use only. Acting in the capacity of a designated emergency first aid provider is not mandatory, and anyone who is uncomfortable with the possibility of being so designated should notify the OSO.

An indoctrination to the bloodborne pathogens standard (29 CFR 1910.1030 will be provided to all employees either during their first aid training, and/or during the initial site safety and health meeting. Hepatitis B and Acquired Immune Deficiency Syndrome (AIDS), among other pathogenic microorganisms, can be contracted during emergency first aid and CPR through contact with blood. It is important to recognize the concept of universal precautions. Universal precautions require one to assume that all blood and bodily fluids contain pathogens and require the use of protective barriers to prevent exposure. Latex gloves and CPR barriers will be available in the first aid supplies stored at each site and should be used prior to attending to a victim's needs. Additionally, washing any body part or surface that has been contaminated with blood is an important part of the universal precautions. The OSO should be notified of any potential contact with blood or bodily fluids resulting from first aid or CPR administered on the job.

A vaccine exists for hepatitis B. Should employees trained in first aid and CPR desire the vaccine, their employer will arrange to have the employee receive the series of inoculations. While less efficient, the hepatitis B vaccine also is effective when administered after exposure to blood containing the hepatitis B virus.

2.3.10 Hearing Conservation

Hearing conservation is included in the initial 40-hour and 8-hour refresher training classes required for the hazardous waste operations and emergency response regulation. The regulations governing respiratory protection can be found in 29 CFR 1910.95. To the extent possible, engineering controls will be used to dampen excessive noise. When necessary, personnel will be issued hearing protection to control noise exposure.

2.3.11 Confined Space Entry

Entry into confined spaces is not anticipated for this project. However, if confined space entry becomes necessary it will be completed using the following guidelines to conduct a confined space entry. General awareness of confined space entry training is provided in the 40-hour initial and 8-hour refresher training programs, however, a detailed confined space entry training program, in accordance with 29 CFR 1910.146 will be required prior to entries into confined spaces. Under no circumstance will employees not specifically trained in confined space safety be permitted to enter a confined space.

2.3.12 Excavation and Trenching

Excavations and trenches will not be required during the execution of field operations at the Off-Plant OU.

2.3.13 Emergency Response Procedures

Each project site will require unique emergency response procedures. All employees will be made aware of the project emergency assistance network and the most probable route of evacuation from a site in the event of an emergency.

2.3.14 Site-Specific Rules and Disciplinary Procedures

Prior to the initiation of site activities, all involved employees will be instructed in any specific safety rules and project disciplinary procedures. Employees will also be instructed in the use of the "buddy" system, as it is described in the following paragraphs.

The "buddy" system will be used at all times when employees are within an exclusion or contamination reduction zone. The "buddy" system is a method of organizing work groups so that there is someone that is always available to:

- Provide his or her partner with assistance in an emergency
- Observe his or her partner for signs of chemical or physical exposure
- Periodically check the integrity of his or her partner's PPE
- Notify the emergency response personnel when an emergency situation occurs.

The "buddy" system usually requires that two or more people work within visual range from one another. However, the "buddy" system can include radio contact if site conditions are such that a person could otherwise work alone. In order to deviate from the buddy system, an explanation of the specific task to be completed is required, along with a procedure for assuring that single person work parties are safe. Any deviations from the buddy system as it is described here will be presented in Section 1.0.

2.3.15 Documentation of Training

Documentation of training requirements are the responsibility of each employer. Written documentation verifying compliance with the training requirements of this section must be submitted to the MWH PSO or OSO prior to entering the exclusion and contamination

reduction zones. Documentation of each worker's current training credentials will be kept in the field office and submitted to regulatory compliance personnel upon request.

2.4 MEDICAL SURVEILLANCE

2.4.1 Introduction

All personnel (including contractors, subcontractors, regulatory agency personnel, client personnel and visitors) entering the exclusion or contamination reduction zones as defined in this HASP, must have completed appropriate medical monitoring requirements required under 29 CFR 1910.120/29 CFR 1926.65, "Hazardous Waste Operations and Emergency Response, Medical Surveillance", and 29 CFR 1910.134, "Respiratory Protection" within the previous twelve months. These requirements provide that all field personnel receive medical examinations:

- Prior to hazardous waste site activities
- Annually
- Upon termination
- Following exposure or injury
- Additionally as needed on a case-specific basis.

The medical surveillance program for each company that allows personnel to conduct field work will be overseen by a licensed physician who is certified in Occupational Medicine by the American Board of Preventive Medicine, or who by necessary training and experience is Board-eligible.

Establishment of a medical surveillance program is essential for the protection of site personnel. The purpose of the program is threefold:

- To establish a baseline picture of health against which future changes can be measured

- To identify any underlying illnesses or conditions that might be aggravated by chemical exposures or job activities, such as use of respiratory protective equipment

- To allow recognition of any abnormalities at the earliest opportunity, so that corrective measures can be implemented.

The MWH PSO will maintain copies of the physician's written authorization statements that all employees conducting hazardous waste site operations are fit for hazardous waste site duty and are able to wear respiratory protection. Any restrictions shall be stated clearly. No one shall be permitted to conduct hazardous waste site operations until a copy of their medical certification is received by the MWH PSO. Copies of the physician's authorization for all site workers will be available for inspection in the designated field office or other project document repository.

An injury or illness (whether on or off the job) may require work restrictions after the employee returns to work. If the injury or illness required seeing a physician, either the attending physician or the physician giving the employment physical will be involved in the decision of when the employee will return to work, and if any work restrictions will apply.

2.4.2 Medical Evaluation

A medical surveillance program should include all of the evaluative techniques presented in the paragraphs below.

Occupational History. A description of previous employment, work responsibilities, and off-the-job hobbies or activities that have involved potential exposure(s) to chemical, biological, physical, or ergonomic stressors. Additional information pertaining to specific incidents regarding known exposures to workplace or off-the-job exposures that resulted in an injury or illness must be provided.

Personal History. A compilation of information regarding height, weight, blood pressure, past illnesses (physical or mental), physical injuries (broken bones, surgeries), smoking history, respiratory illnesses (lung disorders, asthma, bronchitis, pulmonary restrictions), alcohol consumption, exercise rate, vaccinations, allergies (skin or lung disorders), and family medical history.

Physical Examination. Routine physical examination designed to screen for gross abnormalities. Height and weight are recorded for general appearance, physical development and posture.

Laboratory Blood Tests. On-site personnel shall receive a basic panel of blood counts and chemistries to evaluate metabolic, kidney, liver, endocrine, and blood-forming functions. The following blood tests are the desired minimum:

- Complete blood count
- White blood cell, differential cell count and platelet estimate
- Hemoglobin and/or hematocrit
- Albumin, globulin and total protein
- Total bilirubin
- Serum glutamic oxalacetic transaminase (SGOT)
- Lactic dehydrogenase

- Inorganic phosphate
- Alkaline phosphatase
- Calcium
- Phosphorus
- Iron
- Uric acid
- Creatinine
- Urea nitrogen
- Sodium, potassium and chloride
- Carbon dioxide
- Glucose
- Total cholesterol and LDH

Urine Tests. On-site personnel shall have a routine urinalysis that includes:

- Specific gravity
- Microscopic examination
- Acetone
- Albumin
- pH
- Protein
- Glucose

Pulmonary Function Test. Pulmonary function testing is a requirement for the use of respiratory protection. It tests various lung volumes and flow rates. These are compared to predications based on age, sex and height, and can indicate the presence of obstructive or restrictive pulmonary impairment. At a minimum, the tests shall include lung ventilation evaluations of forced expiatory volume in one second forced expiratory volume (FEV_1), FEV in three seconds (FEV_3), forced expiatory flow (FEF), residual volume (RV) and forced vital capacity (FVC).

Vision Test. Vision testing that measures refraction, depth perception, and color vision shall be administered by a qualified technician or physician.

Hearing Test. Audiometric testing performed at 500, 1,000, 2,000, 3,000, 4,000, and 8,000 hertz pure tone should be conducted in an approved, calibrated, booth, by a qualified technician and the results read by a certified audiologist or a physician familiar with audiometric evaluation.

X-Ray. X-ray examinations should be obtained only when clinically indicated by other testing procedures, (i.e., pulmonary function testing). A chest X-ray, when required, should be a standard 14 x 17-inch P-A (posterior-anterior) exposure. However, no chest X-ray shall be obtained if the employee has had one within the past three years, or is pregnant (or suspects she is pregnant). Records should be requested from the former examining physician, radiologist, or hospital. All films shall be read or reviewed by a board-certified "B" reader physician or other competent medical specialist.

Resting 12-lead Electrocardiogram (EKG). An EKG provides baseline data on cardiac function. An EKG is recommended during the initial medical examination, and every three years thereafter. EKGs will be read by a board-certified cardiologist.

2.4.3 Special Circumstances

Additional medical examinations may be required before an employee returns to work after a serious illness or injury. Such examinations may be necessary to assure the employee's continued ability to carry out assigned work activities. The need for these examinations will be determined by the MWH OSO in cooperation with the employee's company occupational health physician.

Employees will receive additional medical monitoring upon notification to the employer of symptoms consistent with over exposure to on-site contaminants, or if the employee is injured or exposed to on-site contaminants at concentrations in excess of the permissible exposure limit during emergency response operations.

2.4.4 Pathogenic Hazards

There may be occurrences when personnel encounter pathogenic microorganisms, either from biologically contaminated waste or from the outdoor environment. Immunizations that may be considered prior to the initiation of field work are for tetanus and hepatitis B. The tetanus immunization is recommended to provide protection in the event that a worker sustains a cut and is exposed to biologically contaminated wastes (medical waste or municipal sewage). The hepatitis B immunization is recommended in the event that a worker comes into contact with blood or other bodily fluids that could be contaminated with blood or blood products (see Section 2.3.9.).

These immunizations are not required by law or OSHA regulation; however they are recommended. (Note: In the case of hepatitis B, the employee needs to sign a declination form if he/she refuses the immunization.)

2.4.5 Emergency Medical Assistance and First Aid

Prior to work start-up, emergency medical assistance network will FMC be established. FMC emergency services including an emergency clinic, Fire Department, rescue and

ambulance service. FMC will take the lead role for administering first aid and in the notification and transport of injured personnel from the facility. Identification of the nearest hospital and a route map is identified in Section 1.0. A vehicle shall be available on-site during all work activities to transport injured personnel to the identified emergency medical facility.

The MWH OSO and several other field team members will be certified to render both first aid and CPR, prior to the initiation of site activities. A first aid kit, including necessary protection against bloodborne pathogens, will be available at each site for use by trained personnel. Table 2-1 presents a list of first aid supplies that should be available for use during field work. An adequate supply of fresh potable water for emergency eye wash purposes or a portable emergency eyewash, also will be available at each site.

2.5 PERSONAL PROTECTIVE EQUIPMENT

2.5.1 Introduction

PPE that will be required during various tasks and procedures is identified in Section 1.0. Efforts will be made to eliminate workplace chemical exposure hazards during the project through the use of engineering controls, as stated in Section 1.0. However, it is recognized that to control many of the potential exposure hazards effectively, the use of PPE still will be required. The U.S. Environmental Protection Agency terminology of Levels D, C, B and A (see Figure 2-2) for personal protective equipment is used to describe the general PPE ensembles that may be used throughout this project.

FMC has specific health and safety ensembles that must be followed at all times. At a minimum, all MWH personnel and subcontractors will wear safety glasses/goggles, steel-toed shoes, a hard hat and a readily available (with each person) full- or half-face respirator with HEPA filters.

An appropriate ensemble of PPE will be selected for initial use on a site-specific and activity-specific basis, accounting for the hazards and potential hazards likely to be encountered during site work. Criteria for upgrading or downgrading a specified level of PPE is presented in Section 1.0. Specific PPE elements are listed in Section 1.0 and are based on an evaluation of the performance characteristics of the PPE relative to the requirements and limitations of the site, the task-specific conditions and the duration of the task. When specifying a PPE ensemble, the following considerations will be evaluated and communicated to employees via this HASP or during tailgate safety meetings:

- Initial PPE selection based on anticipated site hazard
- Limitations of PPE
- Task duration
- Maintenance and storage instructions
- Decontamination or disposal requirements
- PPE training and proper fitting
- Donning and doffing procedures
- Inspection of PPE prior to, during and after use
- Evaluation of the effectiveness of the PPE program
- Effect of temperature extremes on PPE ensemble.

All respiratory protective equipment shall be National Institute for Occupational Safety and Health (NIOSH) and Mine Safety and Health Administration (MSHA) approved. Each employer shall maintain a written respiratory protective equipment program detailing selection, use, cleaning, maintenance, and storage of respiratory protective equipment, as well as medical approval for individual use.

2.5.2 Level D Personal Protective Equipment

Level D Protection Use. Level D protection shall be used under the following conditions:

- The atmosphere must not contain known hazards above individual or combined PELs; it may contain essentially nuisance contamination only
- The atmosphere must contain 19.5 percent oxygen
- Concentrations of airborne toxic organic compounds must not exceed normal background concentrations or specified action levels requiring use of respiratory protective equipment
- Work functions must preclude splashes, immersion in, unexpected inhalation of, or direct contact with hazardous concentrations of harmful chemicals.

Level D Protective Equipment. Level D protective equipment shall consist of the following, unless otherwise stated in Section 1.0:

- Dedicated work uniforms with long pants and short or long sleeve shirt. These may include:
  - Chemical-resistant coveralls
  - Standard Tyvek coveralls
  - Standard cotton (or cotton blend) work uniforms
- Steel-toed and steel-shank safety shoes or boots (leather, PVC or rubber) meeting the specifications of American National Standards Institute (ANSI) Z41.

- Gloves; these may include:

  - Heavy work gloves (e.g., cotton or leather)

  - Impervious gloves. Chemical-specific glove selection guidelines shall be provided in Section 1.0. In general, it is recommended that an impervious glove be worn during all site activities that could result in direct contact with potentially contaminated soil, water or other items

- Safety glasses, goggles, face shield or other approved eye protection; all approved eye protection must meet the specifications of ANSI Z87.1. Safety glasses or goggles that fit over prescription lenses, or prescription safety glasses or goggles are recommended

- Hard hat, unless specifically stated otherwise; all approved hard hats must meet the specifications of ANSI Z89.1

- Escape breathing apparatus, as specified in Section 1.0 when potential site conditions warrant

- Hearing protection (muff or plugs) as necessary. The protective device must have a noise reduction rating capable of providing the wearer with enough protection to reduce the received noise level to below 85 dBA.

2.5.3 Level C Personal Protective Equipment

Level C Protection Use. Level C protection shall be used under the following conditions:

- Concentration of known airborne organics or dust in the breathing zone is above the action levels given in HASPs for individual work tasks

- The types of air contaminants have been identified, their concentrations have been measured, and an APR and chemically protective clothing are available that can protect against the identified contaminants

- The substance(s) has adequate warning properties, and the criteria for the use of an APR have been met

- The atmospheric contaminants, liquid splashes, or other direct contact will not adversely affect any exposed skin

- The atmosphere contains at least 19.5 percent oxygen.

Level C Protective Equipment. Level C protective equipment shall consist of the following:

- Chemical-resistant coveralls. This may include polyethylene coated Tyvek, Saranex, or other approved fabric as specified in Section 1.0

- Steel-toed and steel-shank safety shoes with disposable boot covers or, chemical-resistant steel toed boots, meeting the specifications of ANSI Z41

- Chemical-resistant gloves. This includes: disposable inner gloves, such as nitrile or latex; and disposable outer gloves such as nitrile, Viton, silver shield, 4H, butyl or nitrile, as specified in Section 1.0 for individual work tasks

- Work gloves as necessary to prevent cuts, scrapes and pinches

- Half-face or full-face APR with cartridges specified in Section 1.0 for individual work tasks

- Safety glasses, goggles or faceshield when wearing a half-face APR, meeting the specifications of ANSI Z87.1

- Hard hat, unless specifically stated otherwise, meeting the specifications of ANSI Z89.1

- Cuffs sealed to boots or gloves with duct tape, or equivalent

- Hearing protection as necessary. The protective device must have a noise reduction rating capable of providing the wearer with enough protection to reduce the received noise level to below 85 dBA.

2.5.4 Level B Personal Protective Equipment

Level B Protection Use. Level B protection shall be used under the following conditions:

- The type and atmospheric concentration of substances have been identified and require a high level of respiratory protection, but less skin protection. This involves atmospheres with immediately dangerous to life and health (IDLH) concentrations of specific substances that do not represent a severe skin hazard, or atmospheres that do not meet the criteria for use of APRs.

- Presence of incompletely identified vapors or gases is indicated by a direct-reading organic vapor detection instrument, but vapors and gases are not suspected of containing high levels of chemicals harmful to skin or capable of being absorbed through intact skin.

- Confined-space entry is required.

- Atmosphere contains less than 19.5 percent oxygen.

- Action levels specified in Section 1.0 for contaminants of concern are exceeded.

Level B Protective Equipment. Level B protective equipment shall consist of the following:

- Chemical-resistant coverall, polylaminated, Barricade or Saranex, as indicated in Section 1.0
- Steel-toed and steel-shank safety shoes with disposable boot covers or, chemical-resistant steel toed boots, meeting the specifications of ANSI Z41
- Disposable, inner, surgical or nitrile gloves
- Disposable, outer, chemical-resistant gloves, such as Viton or as specified in Section 1.0 for individual work tasks
- Pressure-demand SCBA or airline system with five-minute egress bottle
- Hard hat, unless specifically stated otherwise, meeting the specifications of ANSI Z89.1
- Ankles/wrists secured with duct tape (or equivalent) to boots or gloves
- Hearing protection as necessary. The protective device must have a noise reduction rating capable of providing the wearer with enough protection to reduce the received noise level to below 85 dBA
- Two-way radio communications, or equivalent.

Use of Level B personal protective equipment requires that at least one person be available as a backup, ready to provide emergency assistance and to assist with the air supply.

2.5.5 Level A Personal Protective Equipment

Level A provides the highest protection available for respiratory, skin and eye protection.

Level A PPE is ***not*** anticipated to be required for use during any MWH field efforts at the Off-Plant OU. However, in the event that site conditions change and the use of Level A becomes warranted, a specialty contractor will be subcontracted to provide assistance with the Level A equipment and work tasks.

Level A Protection Use. Level A protection shall be used under the following conditions:

- The chemical substance has been identified and requires the highest level of protection for skin, eye, and the respiratory system based on either
    - Measured (or potential for) high concentration of atmospheric vapors, gases, or particulates
    - Site operations and work functions involving a high potential for splash, or exposure to unexpected vapors, gases, or particulates of materials that are harmful to skin or capable of being absorbed through the intact skin
- Substances with a high degree of hazard to the skin are known or suspected to be present, and skin contact is possible
- Operations must be conducted in confined, poorly ventilated areas until the absence of conditions requiring Level A protection is determined.

Level A Protective Equipment. Level A protective equipment shall consist of the following:

- Fully encapsulating chemical-resistant suit, as specified in an amendment to a HASP
- Steel-toed and steel-shank safety boots with disposable boot covers or, Chemical-resistant steel-toed boots, meeting the specifications of ANSI Z41
- Disposable, inner gloves; disposable outer gloves also may be necessary
- Pressure-demand, full-face SCBA or pressure-demand supplied-air respirator with escape SCBA
- Hard hat, unless specifically stated otherwise, meeting the specifications of ANSI Z89.1
- Hearing protection as necessary. The protective device must have a noise reduction rating capable of providing the wearer with enough protection to reduce the received noise level to below 85 dBA
- When heat stress is a concern, a cooling unit that can be worn inside of the fully encapsulating suit may be specified
- Two-way radio communications or equivalent.

2.5.6 PPE Storage Procedures

Clothing and respirators must be stored properly to prevent damage or malfunction due to exposure to dust, moisture, sunlight, damaging chemicals, extreme temperatures, and impact. Potentially contaminated PPE should be stored separately from new PPE and street clothing. Always review the manufacturer's instructions for care and maintenance.

PPE storage will be provided at the field office location. Each individual is responsible for ensuring that his or her issued PPE is stored out of temperature extremes and such that the PPE will not degrade or become damaged during storage.

All respirators are to be cleaned after use with either a sanitizing wipe pad or sanitizing soap, and stored in a sealable container. When respirators are not in use, but have been worn, they must be stored in a sealable container, different from the clean storage container.

2.6 SITE CONTROL

Site control is an important part of a field safety and health program. The purpose of site control is to minimize potential contamination of workers, protect the public from site hazards, and prevent theft and vandalism at the site operations. Site control procedures involve site and security controls, staffing, monitoring air quality, respirator protection, dermal (skin) protection, hearing conservation, decontamination procedures, emergency procedures and incident reporting.

2.6.1 Premobilization Meeting

All employees, subcontractors and others entering the field site will be involved in a premobilization meeting conducted by MWH. This meeting will describe the project plan for the site, ensure that all involved parties understand the safety and health requirements, discuss site-specific safety and health concerns and recognize potential or existing health or safety risks. Appropriate client personnel may be requested to provide any site-specific safety and health information at this meeting.

2.6.2 Site Characterization

Section 1.0 provides a preliminary PPE selection prior to mobilization to the field site. Once on site, the OSO and/or subcontractor's OSO will evaluate the work conditions and adjust PPE controls as necessary to properly protect the workers. After this evaluation,

the OSO and/or subcontractor's OSO will decide whether it is necessary to upgrade or downgrade the preliminary PPE levels of protection. Once workers arrive on site, the physical ambient conditions will be evaluated during field activities and background and worker breathing zone concentrations will be recorded in the safety field log book. These data will be collected by using direct reading air monitoring instruments and will be utilized to make decisions regarding changes in levels of PPE.

Prior to mobilization, existing site characteristic information will be used for preplanning purposes. This information will allow the PSO, OSO and subcontractor's OSO to coordinate specific job tasks, and preplan site accessibility and mobilization for heavy equipment. The evaluation of background information on chemical and physical hazards at the field site will allow the PSO to preplan the necessary control measures to be instituted at the site. Other information such as wind speed, wind direction, soil conditions, and site hazards will provide useful information for the preparation of the emergency response plan.

Initial Entry Procedures. Preliminary background data on chemical concentrations will allow the PSO to establish an appropriate PPE level to minimize worker exposures and maintain exposure levels below recommended OSHA PELs, NIOSH RELs, and ACGIH TLVs. Should the preliminary air monitoring data or physical site conditions change (for example, by increasing the airborne contaminant concentrations as a result of field activity), the PSO, OSO or subcontractor's OSO will direct the field staff to either evacuate the site until further air monitoring can be performed to assess workplace concentrations, or upgrade the level of PPE. The PSO, OSO or subcontractor's OSO will conduct the assessment to determine if workplace concentrations are immediately dangerous to life or health. Should the preliminary air monitoring data indicate that the conditions are IDLH, then the PSO, OSO and/or subcontractor's OSO will discontinue field activities until the situation can be further assessed and the appropriate level of PPE selected.

Site Preparation. Any site-specific preparations necessary for the initiation of field work are assessed in Section 1.0.

2.6.3 Site Work Zones

The EPA requires contaminated work sites to be divided into three working zones: exclusion zone, contamination reduction zone, and support zone. Site work zones are discussed below and represented in Figure 2-3.

Exclusion Zone. The exclusion, or "hot," zone is the zone where contamination or potential contamination exists. Because this zone has the potential for workers to be exposed to contaminants, all field staff entering this zone will wear the appropriate PPE, and adhere to the training and medical surveillance requirements presented in Sections 2.3 and 2.4 of this document. Areas with higher concentrations of contaminants within this zone will be identified with field stakes with colored flags. Field personnel will enter and exit the exclusion zone or the higher concentration part of the exclusion zone through a controlled center monitored by the OSO. Gross decontamination will take place near the "hotline," before proceeding to the Contamination Reduction Zone. Prior to field work occurring in this zone, the OSO will develop an emergency exit area. The exclusion zone will be demarcated by using lines, placards, hazard tape and/or signs, or enclosed by physical barriers, such as chains, fences or ropes.

Contamination Reduction Zone (CRZ). The CRZ is the zone where field staff and equipment will undergo gross decontamination. This zone is located between the exclusion and support zones. The CRZ will serve as a buffer to further reduce the probability of the clean zone becoming contaminated or being affected by other existing hazards. It will provide additional assurance that the physical transfer of contaminants via personnel or equipment is limited through a combination of decontamination procedures and a minimum required distance between exclusion and support zones.

Initially, the CRZ will be considered to be a non-contaminated area. As operations proceed, the area around the decontamination station may become contaminated, but to a much lesser degree than the exclusion zone. At the boundary between the exclusion and the CRZ, decontamination stations will be established, one for personnel and one for heavy equipment. The "contamination control line" separating the CRZ and the support zone will be designated with yellow or orange surveyor tape, or other suitable material. Exit from the exclusion zone will be through a designated decontamination corridor. Personnel assisting with decontamination will wear a level of PPE at or one below that used by personnel in the exclusion zone.

Support Zone. The support zone, the outermost part of the regulated area, is free from recognized site hazards. Equipment such as support vehicles, safety vehicles, field offices, etc. will be located in this area. Since normal work attire is appropriate within this zone, potentially contaminated personal protective clothing, equipment and samples will not be permitted.

The location of support facilities in the support zone at each site will depend on a number of factors, including:

- Accessibility: topography, open space available, locations of roads, or other limitations

- Visibility: line-of-sight to all activities in the exclusion zone is preferable

- Wind direction: the support facilities preferably should be located upwind of the exclusion zone. Shifts in wind direction and other conditions may be such that an ideal location based on wind direction alone does not exist

- Resources: water, electricity, places of refuge.

Access to the CRZ from the support zone will be through a controlled access point. Personnel entering the CRZ to assist in decontamination will wear the prescribed PPE. Re-entrance into the support zone will require removal of any PPE worn in the CRZ.

Only authorized personnel will enter regulated areas associated with the field activities. The OSO, will establish the bounds of the regulated areas. The following measures will be taken to assure site security:

- All workers entering the regulated areas will be subject to the provisions of this HASP. The OSO will have the responsibility and authority to enforce this requirement

- All workers entering the CRZ or the exclusion zone will have the appropriate training, PPE, and respiratory protection, and will be enrolled in an established medical surveillance program

- The OSO will maintain a Site Visitor's Logbook, located in the support zone.

2.6.4 Site Security

Site control at project sites will vary from no controls to strict property perimeter controls. When possible, client personnel will be requested to investigate any suspicious activities at the field sites. In some cases an independent security watch may be needed. Security at the sites will be the responsibility of the client during non-activity times (including weekends) unless stated otherwise in Section 1.0.

To maintain security at the sites during working hours, the OSO will:

- Control all site entrances/exits through the support zone through installation of appropriate safety barricades, signs, and/or signal lights

- Establish a personnel identification system, including limitations to an individual's approved activities

- Be responsible for enforcing entry/exit requirements

- Utilize temporary fencing, where feasible

- Post warning signs around the perimeter of the support zone, should the use of temporary fencing not be feasible.

To maintain security during non-working hours, the OSO will secure the site prior to leaving at the end of a working day. All equipment and supplies will be secured or stored in locked facilities, and open holes and trenches will be covered with plywood or similar materials.

2.6.5 Communication Systems

Two general types of communications systems should be available for all workers assigned to field projects. One system will ensure adequate communication between site personnel, and the other will ensure the ability to contact personnel and emergency assistance off the site. Internal communication is used to:

- Alert team members to emergencies

- Pass along safety information, such as weather conditions that could affect heat stress, cold stress or general safety, etc.

- Maintain site control

- Facilitate site work by being able to call to the appropriate party for information, without having to decontaminate the work party and equipment and secure the site.

Verbal communication can be impeded by on-site background noise and the use of personal protective equipment. Thus, it is vital that pre-arranged signals of communication be arranged prior to the initiation of site activities, particularly when heavy equipment work is involved. Common types of internal communication devices include:

- Radios
- Noisemakers: bells, compressed air horns, megaphones, sirens, whistles
- Hand/arm signals.

External communication systems between on-site and off-site personnel are necessary to:

- Coordinate emergency response efforts
- Report to upper management about site activities
- Maintain contact with essential off-site personnel.

Primary means of external communication devices are telephones, radios, facsimile machines, and computer networks.

2.7 PERSONNEL AND EQUIPMENT DECONTAMINATION

2.7.1 Introduction

Decontamination procedures are implemented to control potential migration of chemicals or other site contaminants to clean areas, and to prevent personnel exposure to chemicals or pathogens that may contaminate clothing or protective gear. ***Personnel entering exclusion zones during field activities must decontaminate upon exit from the exclusion zone.*** All personnel, including visitors, must enter and exit the exclusion zone through the contamination reduction corridor. In addition, before demobilization, contaminated equipment will be decontaminated before it is moved into the clean zone.

Any material that is generated during decontamination procedures will be labeled and stored until final disposal arrangements are made.

Note: The type of decontamination solution to be used is dependent on the type of chemical or pathogenic hazard. Section 1.0 specifies decontamination materials when they are different than ordinary soap and water. All personnel will be required to wash their hands (and face optional) with soap before eating, drinking (unless specific procedures are in place to ensure that a drink can be taken without the possibility of contamination), and before leaving the contamination reduction zone. Decontamination solutions will be changed daily (at a minimum) and collected and stored on-site until disposal arrangements are finalized.

2.7.2 Portable Equipment Decontamination

Equipment used in the exclusion zone in areas where contact with site contaminants is likely will be protected from contamination by measures such as enclosure in plastic bags, or by preventing contact with contaminated materials. Equipment decontamination will be determined by the nature of the equipment and extent of contamination.

Equipment removed from the exclusion zone before the end of the job will undergo a gross decontamination step near the work site prior to proceeding to the decontamination area. This step will help to ensure that as many of the contaminants as possible remain in the EZ. This decontamination step will involve scraping and rough brushing to remove dirt and other visible contamination.

2.7.3 Heavy Equipment and Vehicle Decontamination

Heavy equipment and vehicles involved with site work or construction associated with potentially contaminated material will be decontaminated in a designated decontamination area upon leaving the exclusion zone. As a minimum, the equipment

decontamination will be completed at the completion of each test pit over the backfilled test pit prior to moving to a new test pit. All heavy equipment, non-disposable equipment, and supplies will also be cleaned in this area. Employees engaged in equipment and vehicle decontamination will wear adequate PPE to protect from splashes.

2.7.4 Procedures for Personnel Decontamination

All personnel will go through decontamination before leaving the exclusion zone. Personnel also will go through decontamination if their protective clothing becomes torn. Personnel may return to the exclusion zone after changing into clean protective gear. This decontamination procedure applies to personnel at this site wearing Level A, Level B, Level C, or Level D protection with chemically impervious clothing. Table 2-2 lists equipment necessary to perform the maximum level of decontamination that may be needed for a site; Table 2-3 lists equipment necessary to perform the minimum level of decontamination that may be needed for a site; Table 2-4 lists the measures necessary for performing the maximum decontamination activities for a site; and, Table 2-5 lists the measures necessary for performing the minimum, generally acceptable decontamination activities for a site. If radiation becomes a concern at any site, radiation-specific decontamination procedures will be included in Section 1.0 and assistance of a certified health physicist will be sought to plan an appropriate decontamination station. The steps outlined in the following paragraphs will be followed during decontamination.

Station 1: Equipment Drop. Deposit equipment used on site (tools, sampling devices, monitoring instruments, radios, etc.) on plastic drop cloths. These items must be decontaminated or discarded as waste prior to removal from the exclusion zone.

Station 2: Outer Boot and Outer Glove Wash and Rinse. Scrub outer boots, outer gloves, and/or splash suit (if used) with decontamination solution or detergent water. Rinse off with water.

Station 3: PPE Removal. Remove outer boots and gloves. If outer boots (boot covers) are disposable, deposit in container with plastic liner. If non-disposable, store in a clean, dry place. Gloves are to be discarded daily unless appropriate decontamination is achieved. Remove the outer garment and deposit in a plastic-lined container. Remove the respirator and dispose of cartridges. Wash respirator in detergent or sanitizer solution. Wipe off and store the respirator in a clean dry area. Finally, remove the inner gloves and deposit in a container for disposal. PPE shall not be removed prior to decontamination.

Station 4: Field Wash. Personnel will proceed to the washroom or a hand wash station and wash thoroughly before eating or leaving the site. Facilities will be available in the decontamination area.

Personnel conducting in-sewer work will be required to take a shower before leaving the site for the end of the day or work shift. Shower facilities will be available at the central staging area. This area will include a location to discard work clothing and store street clothing.

2.7.5 General Decontamination Procedures

The following decontamination procedures and guidelines shall be implemented:

- Any respirators used will be inspected and washed in soapy water, if necessary, at least at the end of each work shift. All respirators used will be disinfected with sanitary wipes or sanitizer solution every day. All respirators will be stored in sealable plastic bags in a location that is free from chemical or biologic hazards and temperature extremes.

- Use of disposable protective clothing will eliminate the need for extensive evaluation of clothing to determine the effectiveness of decontamination procedures.

- The decontamination sequence will be designed to prevent or minimize direct contact with waste materials.

- All contamination wash water and residues will be collected on site, tested, and disposed of accordingly.

- All disposable protective clothing and contaminated material will be collected in plastic sacks and disposed of appropriately. Non-disposable clothing will only leave the site for commercial laundering.

- In addition to these decontamination facilities, adequate sanitary facilities will be provided.

Figure 2-3 shows a diagram of a designated decontamination area.

2.7.6 Emergency Decontamination

It is not anticipated that emergency decontamination of heavy equipment will be necessary. Emergency decontamination of site personnel may be necessary for medical reasons or in the event of major contamination by contact with contaminated material.

Emergency procedures will include:

- Assistance by on-site personnel for removal of contaminated protective clothing, when time permits.

- If the employee is injured and cannot be moved, attempts will be made to cut the clothing for removal.

- If the situation is life-threatening, decontamination or removal of protective clothing will be considered secondary to medical treatment. If appropriate to minimize spread of contaminants, contaminated personnel will be wrapped in

blankets and/or plastic sheeting (maintaining an open airway) during transport to the emergency treatment facility. Emergency personnel will be notified of the nature of the contaminated material and instructed about the importance of preventing skin contact.

- If the employee can walk or be moved without injury, all affected skin areas should be washed thoroughly with soapy water and rinsed.

- Equipment will be disposed in appropriate collection containers.

- Non-disposable equipment will be placed and cleansed in the area provided for personnel to decontaminate non-disposable equipment.

2.7.7 Contaminant Control

This section outlines measures that will be taken to control contamination and prevent it from leaving the exclusion zone.

The decontamination procedures described above will be the primary sources of contaminant control. All wastewater generated from decontamination procedures will be collected on site, tested, and disposed of accordingly. In addition to these procedures, measures will be taken to limit the movement of dust and vapors that may be generated within the exclusion zone.

Eating, drinking, smoking, chewing, and application of cosmetics shall be restricted to the support zone, except for drinking of replacement fluids. Replacement fluids shall be permitted in designated areas of the contamination reduction zone, under strict protocol to prevent ingestion of contaminated material.

Personnel returning from the exclusion zone or decontamination zone shall cleanse their hands, faces, and other exposed areas thoroughly at the decontamination facility before smoking and eating.

Personnel who may be required to wear respiratory protective equipment, either on a routine or emergency basis, must be clean shaven (free from beards or other facial hair that would interfere with the proper fitting of respirators).

Fingernails must be kept trimmed to minimize the potential of accumulating contaminated solids.

2.7.8 Decontamination Waste Handling and Disposal

Wastes generated as a result of site activities will be handled in accordance with applicable environmental regulations. Unless otherwise specified, water used during personnel decontamination activities will be considered to be contaminated. Investigation-derived wastes and contaminated site materials will be handled and disposed of in accordance with the provisions of the accompanying work plan or client specifications. Unless, specifically stated, personnel are to treat decontamination wastes as part of the investigation-derived wastes.

2.8 STANDARD OPERATING PROCEDURES

2.8.1 General

Standard operating procedures for equipment and project tasks such as drilling, trenching, sampling, and operating treatment systems are specified in Section 1.0. The following practices are expressly forbidden during on-site work:

- Smoking, eating, drinking, chewing tobacco, or applying cosmetics while in the exclusion zone, CRZ, or any potentially contaminated area

- Ignition of flammable materials in the work zone; equipment will be bonded and grounded, spark proof and explosion resistant, as appropriate

- Contact with potentially contaminated substances; walking through puddles or pools of liquid; kneeling on the ground; or leaning, sitting, or placing equipment on contaminated soil

- Performance of tasks in the exclusion zone without a "buddy"; personnel will be required to work using the "buddy" system at all times unless specifically stated otherwise in Section 1.0.

Personnel must keep the following prudent guidelines in mind when on site conducting field activities:

- Hazard assessment is a continual process; personnel must be aware of their surroundings and constantly be aware of the chemical/physical hazards that are present.

- The number of personnel in the exclusion zone will be the minimum number necessary to perform work tasks in a safe and efficient manner.

- Team members will be familiar with the physical characteristics of each site including wind direction, site access, and location of communication devices and safety equipment.

- The location of overhead power lines and underground utilities must be established.

2.8.2 Standard Emergency Hand Signals

Team members will be familiar with the following emergency hand signals:

- Hand gripping throat: "Respirator problems, can't breathe."

- Grip team member's wrist or place both hands around waist: "Leave site immediately; no debate!"

- Thumbs up: “OK, I’m all right; I understand.”
- Thumbs down: “No, negative.”
- Hands on face: “Put on respirator.”

2.8.3 Injury and Illness Prevention Program

The prevention of accidents and minimization of risks is the responsibility of all site workers. Injury and illness prevention protocols are described below. Appendix A presents the MWH IIPP in its entirety. Appendix A will be updated as necessary to incorporate the IIPPs of all MWH subcontractors.

An IIPP is included in this HASP to assure a safe and healthful work environment for the on-site personnel. The OSO or subcontractor’s OSO, as discussed in Section 2.2, will be responsible for implementation of company-specific IIPPs and for determining relative effectiveness. All on-site personnel will be accountable for reading, understanding, and following the guidelines contained in this safety and health program and company-specific IIPPs affecting on-site work. There are nine key components of an IIPP. Each component is summarized below:

- **Identification and Evaluation of Hazards:** It is the intent of this HASP to identify and evaluate the potential hazards associated with each site and the remedial objectives/actions associated with the site.

- **Inspections:** Inspections will be performed on a daily basis by the OSO or subcontractor’s OSO, to assess the effectiveness of both the IIPP and HASP. The PSO may be on site periodically to conduct audits of the safety and health program and HASP compliance.

- **Correction of Unsafe Conditions:** As a result of daily safety inspections and periodic site safety and health audits, unsafe conditions will be identified and a site-specific action plan developed to alleviate the unsafe condition. It is the

responsibility of the OSO to coordinate the implementation of corrective site actions. Such corrective site actions will be considered a top priority and receive necessary support from MWH management. When immediate health or safety hazards exist on the site, it will be the responsibility of the OSO to halt site activities, until the immediate threat has been abated.

- **Accident Investigation:** Appendix D of this document contains the recommended procedure for reporting and investigating site accidents, incidents and "near miss" accidents or incidents. All site personnel will be held responsible for reporting accidents, incidents and near misses. The OSO will begin the accident investigation procedure and determine if additional assistance is required. If required, the PSO will be come to the site and participate in the accident investigation. Reports will be disseminated to management and corrective actions will be communicated to all site workers.

- **Communication:** Communication will take place on the site in accordance with the training provisions of Section 2.3 of this HASP. Emergency phone numbers will be posted for the fire department, ambulance service and the nearest emergency medical clinic/hospital. As stated in Section 2.3, tailgate safety meetings will be conducted to discuss pertinent site safety topics at the beginning of each shift, whenever new personnel arrive at the job site, and as site conditions change. These meetings will be conducted by the OSO and, at the conclusion of each meeting, a completed tailgate safety meeting form must be posted at the job site. A sample Tailgate Safety Meeting Form is found in Appendix C.

- **Training**: Various training requirements exist for conducting hazardous waste operations field work. These requirements are detailed in Section 2.3 of this document.

- **Record keeping:** Various records documenting training, tailgate safety meetings, site inspections, accident reports, medical surveillance examinations and general site safety and health information are required for this project. Section 2.10 of this document presents a detailed description of each of these record keeping issues.

- **Responsibilities:** Clear assignment and definition of the various roles and responsibilities of this safety and health program are vital to its success. Section 2.2 of this document presents a detailed description of the various roles and responsibilities involved in the safety and health program. Section 1.0 identifies by name the individuals tasked with the various roles and responsibilities identified in Section 2.2.

  Disciplinary Action: All persons assigned to the field are expected to conduct themselves in a manner that promotes the safety and health of themselves and their fellow workers. Employees not able to conform to the safety and health protocols contained in this document will be subject to disciplinary action, up to and including termination. Personnel who knowingly disobey safe operating procedures will be disciplined. Depending on the nature of the infraction, the disciplinary action will progress from a verbal warning, to a written warning, to a suspension from site activities, to dismissal from the site.

2.8.4 Engineering Controls

Where economically and practically feasible, engineering controls will be selected to reduce exposure of site personnel to health or safety hazards. Engineering controls that may be feasible include use of pressurized cabs or control booths on equipment, use of remotely operated material handling equipment, dust suppression techniques (such as wetting down a surface with a water spray), noise insulation barriers, and use of shoring devices for trench or excavation entry.

2.8.5 Administrative Controls

When engineering controls are not feasible, administrative controls in the form of work practices will be implemented to minimize risk to personnel from site hazards. Work practices that may be instituted include removing all non-essential personnel from the exclusion zone and locating employees upwind of the hot zone. Work rotation will be used to control exposures to extreme thermal stresses; however, work rotation for the purpose of limiting exposure to site personnel from airborne chemical hazards is unacceptable.

2.8.6 Unanticipated Work Practices

MWH typically does not conduct investigations of sites with drums of unknown contents, explosives, or chemical warfare agents. When such work is required, detailed procedures for safety and health will be prepared as addenda to this HASP.

2.9 EMERGENCY RESPONSE PLANNING

The objective of this HASP is to minimize the potential for chemical, biological, and physical hazards, and operational incidents. As part of this program, emergency response planning provides procedures for responding to emergencies that may occur during the project. ***It is not the intention of this program to include professional emergency response activities as part of the field operations. Thus, all site personnel are instructed to assess emergencies in terms of whether the problem can be solved safely with the personnel and equipment at the site. If it is determined that site personnel are able to contain the emergency safely, they should do so. If it is determined that the emergency is beyond the abilities of site personnel, evacuation and notification must take place immediately.*** This section provides general information for responding to emergency situations.

Emergency Medical Assistance. Emergency telephone numbers and a map showing the locations of the hospitals or emergency clinics capable of providing emergency service for hazardous waste site workers are provided at the end of Section 1.0. Telephone numbers for the Poison Control Center, local Police and Sheriff's Departments, local Fire Department (including their emergency rescue squad), Office of Emergency Services, MWH management, and client contacts also are included.

Standby Vehicles. Vehicles that can be used to transport injured personnel from work sites will be available on-site during working hours.

Communication System. A system will be available on site for communicating with off-site personnel. On-site communication systems may include cellular phones, two-way radios, or other suitable devices.

The On-Site Safety Officer (OSO) or Subcontractor's Designated OSO. The MWH or subcontractor's OSO will be the lead person in emergency situations associated with on-site work.

First Aid and CPR. As many of the field team as is possible will be certified to render first aid and CPR prior to initiation of site activities. First aid supplies and potable water will be available at all active work sites. Portable emergency eye wash stations will be available at specific work locations where the possibility of contacting corrosive liquids or other eye splash hazards exist.

Project-Specific Training. Prior to the start of work, all project personnel will receive training in the established emergency response procedures and associated equipment. A dry-run to each hospital will also be made, ensuring that each project team member knows the way to the nearest emergency facility.

Evacuation Routes. Any unexpected vapor release, fire or explosion will cause all associated site work to cease and call for the immediate evacuation of the given work

site. At each work site, evacuation routes will be clearly communicated to all project workers. This information will be discussed during each tailgate safety meeting. A safe meeting place will be designated on a site-by-site basis so that a headcount can be made following an emergency evacuation.

Project Safety and Health Reporting. All accidents, safety-related incidents, and safety-related near misses will be documented and reported to the MWH OSO and company-specific safety and health contacts.

2.10 DOCUMENTATION

Documentation of personnel credentials, site activities, and environmental monitoring will be maintained on-site at the project office. Examples of some of the record-keeping forms are presented in the Appendices of this HASP. The MWH PSO or designated OSO will maintain and update these documents. Appropriate regulatory agency personnel shall be granted access to these records. Minimum project safety and health compliance documentation requirements are presented in the following subsections. Additional site-specific documentation requirements, if any, are included in Section 1.0.

2.10.1 General

- **OSHA Job Safety and Health Protection Poster:** A copy of this poster shall be hung in the field office or in an area where employees routinely congregate (see Appendix E).

- **The OSHA 200 log:** This is the log containing the required information for recording on-site injuries and illnesses. This record must be generated by each company safety contact, and a copy is maintained on-site and posted during the month of February.

- **Calibration records for all air monitoring equipment:** This record should include the manufacturer, model, and serial number of the equipment. The

calibration method (span gas, electrical test, etc.), the instrument response to the calibration, and a battery check (when applicable).

- **Records and/or logs of air monitoring results:** All monitoring conducted in association with the field work must be documented. At a minimum the documentation shall include the instrument identification, date and time of measurement, and result of measurement.

- **Accident/incident/near miss reports:** All accidents, safety/health incidents, and near misses shall be investigated. All investigation reports shall be maintained at the site. A copy of the MWH Employee Injury Report Form and Procedure are included in Appendix D.

- **Safety problem/observations:** Records used to: 1) document unsafe behavior and initiate disciplinary action, and 2) document exemplary safety behavior.

- **Daily inspections:** Inspections of daily site operations will be conducted by the MWH OSO or subcontractor's OSO and will be recorded in a log book or other appropriate recording method.

- **Periodic safety and health audits:** Periodic safety and health audits will be conducted at MWH field sites by the PSO, and a report of the findings issued. These reports will be maintained in the field office.

- **The safety and health inspection log:** A log or other record-keeping format to be completed daily to verify that site conditions and activities are in compliance with this safety and health program. Deficiencies will be noted and changes made immediately.

- **Documentation of decontamination:** Records including the date, time, type of decontamination, equipment type, identification, name of operator, and signatures of operator and any authorized inspector.

- **Certificates for the following:**

  - Initial 40-hour, or 24-hour, HAZWOPER training

  - Applicable annual 8-hour refresher HAZWOPER training

  - Applicable 8-hour supervisory HAZWOPER training

  - Site-specific training

  - First Aid and CPR

  - Medical clearance for working on hazardous waste sites and wearing respiratory protection.

- **Hazardous Waste Operations and Emergency Response:**

- A sign-in sheet containing the date, name of each individual on site, the employer, and the time entering and leaving the site. All personnel will sign this form, whether or not they enter an exclusion zone or contamination reduction zone.

- The pre-entry site-specific safety and health training record containing the date, the individuals' names and signatures, and the company they are representing.

- The daily Tailgate Safety Meeting Form (see Appendix C) containing the date, topic discussed, individuals' names and signatures, and the company they are representing.

- The exclusion zone sign-in sheet containing the date, the individual's name, company they represent, time in and time out of exclusion zone.

- A copy of this HASP.

- **Respiratory Protection:**

  - Respirator fit test certificates containing the employee's name, signature, date, testing challenge, respirator manufacturer, pass/fail results, and signature and title of qualified tester.

  - The respirator log containing the date, names of individuals on-site, type and size of respirator.

  - When using supplied air respirators. The SCBA Monthly Inspection Report containing a check list for inspections regarding case/storage area, general condition, face piece, head straps and harness, regulator/gauges, breathing air supply, repairs/ maintenance required, and date/inspector's signature. This requirement holds for those tasks performed in Level B, or for emergency SCBA equipment used.

- **Confined Space Entry:** Confined Space Entry Permits, when applicable, containing date of entry, date of permit expiration, location, PPE requirements, monitoring results, safety requirements, respiratory protection requirements, possible contaminants, signature, and time of entry approval.

2.11 THERMAL STRESS AND SEVERE WEATHER

2.11.1 Heat Stress

The stress of working in a hot environment can cause a variety of illnesses including heat exhaustion or heat stroke; the latter can be fatal. Personal protective equipment (i.e., EPA Level A, B or C protection) can increase heat stress significantly.

Acclimatization to Extreme heat can take nearly 2 weeks for a person not tolerant to outside working conditions. Please allow yourself and the work force the necessary time to rest, recuperate, and replenish necessary needs during this acclimatization process.

On the jobsite, it is strongly recommended that each employee drink 16-20 oz of water/fluids prior to beginning work and then drink 8-12 oz every 20-30 minutes during the course of the work day. Salt tablets are strongly discouraged as workers should replenish lost salts (potassium and sodium) through normal dietary process. NOTE: During the acclimatization process, increased salt intake is normal and to be expected.

It should be noted that heat stress can also occur in people wearing regular, permeable work clothing.

Quantitative physiological monitoring for heat stress also may be conducted. Physiological monitoring for heat stress includes heart rate as a primary indicator and oral temperature as a secondary indicator. The frequency of monitoring depends on the ambient temperature and the level of protection used on-site. To determine the initial monitoring frequency, after a work period of moderate exertion, use the following information:

Adjusted Temperature*	Level D	Mod Level D or Level C
90 F or above	After 45 minutes	After 15 minutes
87.5 to 90 F	After 60 minutes	After 30 minutes
82.5 to 87.5 F	After 90 minutes	After 60 minutes
77.5 to 82.5 F	After 120 minutes	After 90 minutes
72.5 to 77.5 F	After 150 minutes	After 120 minutes

* Adjusted air temperature (F) = observed temp + (0.13 x percent sunshine)

Observed temp = air temperature measured with bulb shielded from radiant heat.

Percent sunshine = the time sun is not covered by clouds thick enough to produce a shadow (100 percent = no cloud cover and a sharp, distinct shadow; 0 percent = no shadows). Source: The Industrial Environment, its Evaluation and Control; U.S. Department of Health and Human Services, 1973.

The following procedures and action levels are to be used for the physiological monitoring of heat stress:

- **Heart rate:** Count the radial pulse during a 30-second period as early as possible in the rest period. If the heart rate exceeds 110 beats per minute at the beginning of the rest period, shorten the next work cycle one-third and keep the rest period the same. If the heart rate exceeds the 110 beats per minute at the next rest period, shorten the following work cycle by another one-third and also monitor oral temperature.

- **Oral temperature:** Use a clinical thermometer (3 minutes under the tongue) to measure the oral temperature at the end of the work period (before drinking). If oral temperature exceeds 99.6 F, shorten the next work cycle by one-third without changing the rest period. If oral temperature exceeds 99.6 F at the beginning of the next rest period, shorten the following work cycle by one-third. ***DO NOT*** allow a field team member to wear EPA Level C or higher protection when oral temperature exceeds 100.6 F.

Personnel will be trained to recognize the symptoms of heat stress and the appropriate action to take upon recognition. Even though physiological monitoring is not always necessary, it is essential that personnel understand the significance of heat stress and its recognition.

Some of the symptoms that indicate heat exhaustion are:

- Clammy skin
- Weakness, fatigue

- Lightheadedness
- Slurred speech
- Rapid pulse
- Confusion
- Fainting
- Nausea or vomiting

If these conditions are noted, the following steps should be taken:

- Remove the victim to a cool and uncontaminated area
- Remove protective clothing
- Give water to drink, if conscious.

Symptoms that indicate heat stroke include:

- Staggering gait
- Hot skin, temperature rise (yet may feel chilled)
- Incoherent, delirious
- Mental confusion
- Convulsions
- Unconsciousness

If heat stroke conditions are noted, immediately perform the following steps:

- Remove victim to a cool, uncontaminated area
- Cool the victim, whole body, with water, compresses and/or rapid fanning
- Give water to drink, if conscious
- Transport the victim to the designated medical facility for further cooling and monitoring of body functions. ***HEAT STROKE IS A MEDICAL EMERGENCY!***

2.11.2 Cold Stress

On days with low temperatures, high winds, and humidity, anyone can suffer from the extreme cold. Severe cold exposure can be life threatening. Several factors increase the harmful effects of cold: being very young or very old, wet clothing, having wounds or fractures, smoking, drinking alcoholic beverages, fatigue, emotional stress, and certain diseases and medications.

General. Cold weather injuries may be local or systemic. Local cold weather injuries include chilblains (chronic injury of the skin and peripheral capillary circulation) and frostbite. Frostbite occurs in three progressive stages: frostnip, superficial frostbite, and deep frostbite. Systemic cold injuries due to hypothermia are those that affect the entire body system. Hypothermia is caused by exposure to cold and is aggravated by moisture, cold winds, fatigue, hunger and inadequate clothing or shelter. Precautionary measures that will be taken include:

- Providing field shelters or wind screens
- Monitoring temperature and wind speed to determine appropriate cold stress personal safety measures
- Adjusting work schedule based on weather conditions and temperature
- Providing insulated clothing for field workers
- Adhering strictly to the buddy system so that workers can assess cold stress symptoms in their co-workers.

Frostbite Monitoring. Frostbite is a potentially crippling condition that can occur when inadequately protected skin or body parts are subjected to freezing weather. All team members should continually be alert for signs of frostbite in coworkers and bring it to the attention of the OSO. A cold feeling, pain, and numbness precede the onset of frostbite.

Frostbite usually appears as gray or white waxy spots on skin. Areas most susceptible are nose, ears, and cheeks. The following steps should be taken to avoid frostbite:

- Dress warmly
- Wear layers of clothes
- Keep boots and gloves loose-fitting
- Stay dry; carry extra clothing
- Avoid touching cold metal with bare hands
- Avoid spilling cold fuel, alcohol, or other liquids that freeze below 32°F on your body or clothing.

If a person suffers frostbite, get them to a hospital as soon as possible. If transport to a hospital is not immediately available, get the person to a warm shelter and immediately perform the following:

- Cover exposed areas with additional clothing while still exposed to the elements
- Wrap the person in blankets or a sleeping bag
- Give the person warm drinks (no liquor)
- Undress the frozen part and submerge the frozen part in a tub of warm water (102° F to 105°F), or put the frostbitten person in a large tub of warm water, if available, and stir the water
- Warm with skin to skin contact, such as placing warm hands on frozen nose or ears, but do not rub
- Get the person to a hospital as soon as possible.

Do ***not*** allow the following to occur:

- Do not rub the frozen part
- Do not give the person liquor
- Do not allow the person to walk on thawed feet
- Do not let the person smoke
- Do not break any blisters that may form
- Do not let the thawed part freeze again
- Do not warm the frozen part in front of a source of dry heat (open fire, oven, etc.).

Hypothermia Monitoring. Hypothermia is a lowering of the body's temperature due to exposure to cold or cool temperatures. All team members should continually be alert for signs of hypothermia in co-workers and bring it to the attention of the OSO. Most cases of hypothermia occur at temperatures between 30° F and 50° F. If not properly treated, hypothermia can cause death. Safety equipment for hypothermia should include a synthetic sleeping bag and a hypothermia thermometer. Hypothermia is a medical emergency. Transport to a hospital as soon as possible, even if victim appears to be recovering.

To prevent hypothermia:

- Eat well prior to exposure
- Dress warmly
- Avoid becoming wet due to sweating, rain or snow, or falling in water.

Early signs of hypothermia may include:

- Violent shivering

- Slurred speech
- Decrease in coordination
- Confusion, inability to answer simple questions
- Unusually irritable behavior
- Strange behavior
- Tendency to drop or lose clothing or equipment.

As hypothermia progresses into more serious stages victims typically:

- Develop trouble seeing clearly
- Become sleepy and numb
- Move with difficulty
- Eventually become unconscious, if not properly cared for.

The following actions should be taken to treat a hypothermia victim:

- Get the victim to a warm, dry shelter as soon as possible
- Remove any wet or cold garments and dry the person thoroughly
- Wrap the victim in blankets, sleeping bags or dry clothing to prevent more heat loss
- If a warm area is not available:
    - Build a shelter and put the victim in the warmest, driest area available
    - Remove any wet or cold garments

- Have one or more persons remove their clothing and lay next to the victim, providing skin to skin contact

- Wrap the victim and rescuers in dry warm blankets, sleeping bags or clothing

- When the victim becomes conscious, place warm objects along the victim's sides to warm vital areas

- When the victim is able to swallow easily, provide warm, sweetened drinks and food (preferably candy or sweetened food)

- Do not give the victim alcohol or allow them to smoke

- Do not rub the victim's skin

- Keep checking the victim and give additional assistance as needed.

2.11.3 Severe Weather

While each project site will be subject to varying types of weather conditions, this section provides general information and controls on several types of severe weather. Section 1.0 will describe any adverse weather conditions anticipated for the field program.

Lightning. If a lightning storm is suspected or observed, all site activities must be stopped, and site equipment must be evaluated for its potential for acting as a lightning rod. Drill rig masts provide conduits for lightning to strike and injure workers. Personnel should wait indoors for the storm or lightning event to end. If the strike of lightning occurs and personnel are out in an open field, the response should be to disband from one another and lay low to the ground by dropping to your knees and bending forward with your hands wrapped around your knees, away from any poles or trees.

Persons struck by lightning receive a severe electrical shock and may be burned, but they carry no electrical charge and can be handled safely. Someone who appears to have been killed by lightning often can be revived by prompt action. Those unconscious but breathing probably will recover spontaneously. First aid and CPR should be administered as appropriate until medical assistance arrives. Realize that victims who appear to be only stunned or otherwise unhurt also need attention. Check for burns, especially at fingers and toes and next to metal buckles, jewelry, or personal items that the victim is wearing. Remember to treat for shock.

Tornadoes. Tornadoes usually develop from thunderstorms and normally occur at the trailing edge of a storm. Most tornadoes occur in the months of April, May, June, and July in the late afternoon and early evening hours.

When storms are predicted for the project areas, monitor weather conditions on a radio. A tornado watch is issued when favorable conditions exist for the development of a tornado. A tornado warning is issued by the local weather service office whenever a tornado has actually been sighted or is strongly indicated by radar.

If a tornado warning is issued, seek shelter immediately. If there are permanent buildings located on site, go there immediately, moving toward interior hallways or small rooms on the lowest floor.

If a tornado warning is issued and you are in a vehicle or a site trailer, leave and go to the nearest building. If there are no buildings nearby, go in the nearest ditch, ravine, or culvert, with your hands shielding your head.

If a tornado is sighted or a warning issued while you are in open country, lie flat in a ditch or depression. Hold onto something on the ground, such as a bush or wooden fence post, if possible.

Once a tornado has passed the site, site personnel are to assemble at the designated assembly area to determine if anyone is missing or injured. Administer first aid and seek medical attention as needed.

Winter Storms. When snow or ice storms are predicted for the project area, site personnel should monitor radio-reported weather conditions. A winter storm watch is issued when a storm has formed and is approaching the area. A winter storm warning is issued when a storm is imminent and immediate action is to be taken.

When a storm watch is issued, monitor weather conditions and prepare to halt site activities. Notify the project manager of the situation. Seek shelter at site buildings or leave the site and seek warm shelter.

If you are caught in a severe winter storm while traveling, seek warm shelter if road conditions prevent safe travel. If you are stranded in a vehicle during a winter storm:

- Stay in the vehicle. Disorientation comes quickly in blowing and drifting snow.
- Wait for help.
- Keep a window open an inch or so to avoid carbon monoxide poisoning.
- Run the engine and heater sparingly.
- Keep watch - do not let everyone sleep at the same time.
- Exercise occasionally.

2.12 GENERAL SITE PROGRAMS

2.12.1 Hazard Communication Program

MWH has a Hazard Communication Program. A copy of the hazard communication program of will be solicited for use as a project office reference. All site personnel, MWH and subcontractors, will be made aware of the MWH Hazard Communication Program and have access to MSDSs for chemicals brought to any field site.

2.12.2 Spill Containment Program

Drums or other containers will be on site to store decontamination fluids and waste PPE. All field team members will exercise care when decontaminating equipment and personnel, and will treat any spilled decontamination water or fluid as a hazardous material. If a spill occurs, field team members will:

- Assess the need to don a higher level of PPE. This assessment will depend on the volume of the spill, nature of the spilled material, and measurements from air monitoring equipment.

- Obtain an appropriate drum or container to package the spilled material.

- Pump or scoop up the spilled material and any additional contaminated soil or articles, and place the material in a drum or other suitable container. This will be done in the appropriate level of PPE.

- In the event that the spill is too large to be handled safely by the field team, the area around the spill will be secured and the OSO will initiate clean-up activities by notifying the appropriate emergency or spill response organization. Once efforts to mitigate the spill are underway, the MWH Project Manager and appropriate client representatives shall be notified.

2.12.3 Fire Protection Plan

General. Field activities associated with hazardous waste operations potentially could result in a fire at a site. Cigarette smoking is expressly forbidden in the exclusion zone.

Air monitoring equipment used to monitor for flammable mixtures will be intrinsically safe and measurements collected at a frequency which will allow for a reliable assessment of the fire hazards at a site. Invasive field activities will be monitored with direct reading air monitoring equipment, as specified in Section 1.0. At least one Class ABC dry chemical fire extinguisher, 10-pound minimum, will be available for use at each site.

All electrical wiring will be free from frayed ends and sections, and all hook-ups will be checked for loose fittings. Portable power tools will be connected to a ground fault circuit interrupter and care will be taken to ensure that electrical connections do not exceed the maximum load capacity for any one circuit.

Wildfires. Areas (particularly the southwestern United States) with open spaces of natural brush present the danger of wildfires when dry grasses and brush catch fire. Many project sites have structures that can provide enough of a fire break to prevent wildfires from endangering site personnel, but, it is not an absolute protective measure. For this reason, the MWH OSO will check regularly with the local fire department during the most common wildfire months (July through November). Should a wildfire threaten a work site, the MWH OSO will watch for changing conditions and evacuate and secure each active site, in accordance with local fire department instructions.

Fire or Explosion Response Action. The actions listed below are in a general chronological sequence. Conditions and common sense may dictate changes in the sequence of actions and the addition, elimination, or modification of specific steps.

Immediate Action. Upon detecting a fire/explosion, employees will notify the fire department and determine whether or not the fire is small enough to extinguish readily with immediately available portable extinguishers or water, or if other fire-fighting methods are necessary.

Non-essential personnel will be directed away from the area of the fire.

If it is judged that a fire is small enough to fight with available extinguishing media, employees will attempt to extinguish the fire provided that:

- They are able to approach the fire from the upwind side, or opposite to the direction of the fire's progress.

- The correct extinguisher is readily available. Type ABC (10-pound recommended minimum) fire extinguishers will be provided in work areas and on vehicles.

- No known complicating factors are present, such as likelihood of rapid spread, imminent risk of explosion, or gross contamination.

Personnel leaving a fire/explosion area will notify the fire department and will account for all employees in that work area as soon as possible. The OSO or designee will perform a head count for that work area.

Notification. The MWH OSO will be notified as soon as possible of the location, size, and nature of the fire/explosion. A member of the MWH management team will notify appropriate agency personnel in the event of a fire or explosion resulting in a release of a hazardous material to the environment.

As conditions dictate, the OSO will declare an emergency, initiate the remedial procedures, request assistance from the fire department, and make the necessary on-site and off-site notifications. If assistance from the fire department is required, an escort appointed by the OSO will direct responders' vehicles over clean roads to the extent possible to limit contamination. Note: National Fire Protection Association (NFPA) guidelines call for notifying the fire department, even for small fires to ensure proper extinguishment.

Rescue. If employee(s) are unable to evacuate themselves from a fire/explosion area for any reason, their rescue will be the first priority of responders. The Project Supervisor

and/or OSO will determine whether on-site resources are sufficient to proceed, or if rescue must be delayed until outside responders arrive.

Fire-Fighting Procedures. Planned fire-fighting procedures are described below. These apply to small fires that the project team members are able to control.

Fire During Working Hours: In the event a support zone fire occurs during working hours, the following measures will be taken to put out the fire. These measures are sequential, that is, if the first measure does not succeed in containing the fire, the next measure will be initiated.

- Use fire extinguishers
- Confirm that request for assistance from the fire department has been made
- Utilize earth moving equipment, foam unit, and water truck, as appropriate. Brush fires will be extinguished with water.

Fire During Non-Working Hours: In the event of a fire during non-working hours, existing alarms, site security (if applicable), or whomever from the project team is notified, will notify the MWH OSO or PSO. Additional actions will be consistent with procedures established for a fire during working hours.

Response Coordination. Upon arrival of outside responders from the fire department, the OSO will coordinate with the leader of the outside responders to direct fire-fighting activities; however, the control of the scene is now the responsibility of the leader of the outside responders.

Protection of Personnel. The primary methods of protecting personnel from fire conditions will be by distance and remaining upwind. Based on the conditions, the OSO will determine appropriate distances and the selection of personal protective equipment for field team members.

Decontamination. At the conclusion of fire fighting activities, the OSO will:

- Determine to the extent practicable the nature of the contaminants encountered during the incident.

- Arrange for all outside responders' fire response equipment, and on-site equipment as necessary, to be processed through the site decontamination zone, using methods appropriate for the contaminants involved.

- Equipment not easily decontaminated shall be labeled and isolated for further action, such as determining specific contaminants by wipe sampling or awaiting the delivery of specific decontamination media and supplies.

Fire Extinguisher Information. The four classes of fire, along with their constituents, are as follows:

Class A - Wood, cloth, paper, rubber, many plastics, ordinary combustible materials

Class B - Flammable liquids, gases, and greases

Class C - Energized electrical equipment

Class D - Combustible metals such as magnesium, titanium, sodium, and potassium.

Examples of proper extinguishing agents are as follows:

Class A - Water

Water with one percent AFFF Foam (wet water)

Water with five percent AFFF or Fluoroprotein Foam

ABC Dry Chemical

Halon 1211

Class B - ABC Dry Chemical

Purple K

Halon 1211

Carbon Dioxide

Water with six percent AFFF Foam

Class C - ABC Dry Chemical

Halon 1211

Carbon Dioxide

Class D - Metal-X Dry Chemical

No attempt should be made to extinguish large fires. These should be handled by the fire department. The complete area of the fire should be determined. If human life appears to be in danger, or the spread of the fire appears to be rapidly progressing, move personnel further upwind away from the fire.

Use of Fire Extinguishers. Inspect the fire extinguisher on a monthly basis to ensure that the unit is adequately charged with extinguishing media. Do not store a fire extinguisher on its side. To use the extinguisher, follow the acronym PASS for instructions listed below:

1. **P**ull the pin on the top of the unit
2. **A**im at the base of the fire.
3. **S**queeze the handle on the top of the unit.

4. **S**weep the extinguishing media along the base of the fire until the fire is out. Ensure that the fire is fully cooled before assuming it is completely extinguished.

2.12.4 Earthquake and Disaster Preparedness

If an earthquake or disaster occurs during working hours and the magnitude is such that site personnel may be in danger, the MWH OSO will initiate the site evacuation procedure. This action is to be taken only if in the judgment of project personnel and/or OSO that the earthquake is large enough to have potentially caused damage to any of the structures or equipment being used on the site.

If the earthquake or disaster occurs during non-working hours the OSO will determine whether safe entry into the exclusions zones can be made, or if an inspection is needed first.

If at any time, the inspection team feels that they need the assistance of the fire department, the inspection shall cease until the fire department is able to assist. The inspection will be conducted using the buddy system. The team will look at all structures, equipment, and any chemical storage areas for signs of cracks or deterioration. When assessing areas known to contain chemicals, appropriate air monitoring equipment will be used to ensure that leaks are detected quickly and without injury to the inspection team. When inspecting areas where chemical releases could have occurred as a result of a breach of containment, Level B PPE is recommended.

In the event of a catastrophic earthquake or disaster, up to 72 hours could elapse before emergency assistance arrives. Therefore, it is advisable for the project team to maintain enough supplies (food, water, emergency supplies such as first aid kits, personal medication, and any other applicable supplies) for each person scheduled to work on a full-time basis. These supplies should be stored in a place that is not likely to be impacted by an earthquake or other type of disaster.

2.12.5 Sanitation

Work breaks, eating, drinking, and conducting paperwork tasks will be performed in the field vehicle or other suitable location outside of the exclusion zone and contamination reduction zone. Field personnel will wash their hands prior to eating or drinking.

Project site toilet facilities may be available to site workers. If it is determined that an existing toilet facility is not located within a suitable distance (up to five minutes vehicle ride) to a particular site, portable toilet facilities will be rented and brought to the project site. One toilet will be rented if the anticipated size of the field crew will not warrant the rental of two toilets, one for each sex. However, separate-sex toilet facilities will be required if there are more than 20 people at a project site. Any rental toilet will be equipped with a door that is lockable from the inside. Rental toilets will come equipped with a minimum of a weekly cleaning service. A visual search for spiders (particularly black widow spiders) should be conducted prior to using any portable toilet.

Potable water will be available in the support zone for all field team members. The OSO is responsible for ensuring that an adequate supply of water is available at the site. During times of heavy labor and hot temperatures, it is recommended that approximately one liter of water per hour be ingested. Sport-type beverages also may be provided for site personnel. Non-potable water outlets must be clearly identified.

2.12.6 Illumination

Most site work will be done during daylight hours. When performing work during non-daylight hours, personnel must be furnished with sufficient light. OSHA requires a minimum of five foot-candles of light for general work sites. Five foot-candles is likely to be inadequate and additional light may be required. Most equipment rental companies maintain light sources capable of providing enough light for site work. Ensure that all electrical lines are properly grounded (i.e., with a ground-fault circuit interrupter) and that explosion-proof lighting is used in flammable atmospheres.

2.13 GENERAL INFORMATION ON CONTAMINANTS OF POTENTIAL CONCERN

This section provides general information pertaining to the occupational health limits for chemical, biological, and radiological contaminants.

2.13.1 Chemical Contaminants of Concern

A summary of the results of previous investigations and information concerning the occupational exposure limits and toxicological information for chemicals of concern are presented in Section 1.0.

Occupational Exposure Limits. The toxic hazards to site personnel associated with the suspected site contaminants can be assessed through comparison of actual exposures with several established occupational exposure limits. PELs are established by OSHA. RELs are established by NIOSH. Threshold Limit Values/Time Weighted Averages (TLV/TWAs) are established by the American Conference of Governmental Industrial Hygienists (ACGIH). IDLH values are established by NIOSH. These occupational exposure limits are described as follows:

- Permissible exposure limits are established by federal or OSHA. PELs may be expressed as an 8-hour TWA or as a ceiling limit. Ceiling limits may not be exceeded at any time. PELs are enforceable by law.

- RELs are developed by NIOSH. RELs are published guidelines that recommend employee exposure limits for airborne contaminants. RELs are expressed as a TWA or Ceiling Limit.

- The ACGIH TLV/TWA is defined as the airborne concentration of a substance to which nearly all workers (8 hours per day, 40 hours per week)

may be repeatedly exposed, day after day, without experiencing adverse health effects. For some substances, the overall exposure to a substance is enhanced by skin, mucous membrane, or eye contact. These substances are identified by a notation (s) following the TLV/TWA values. Other substances have a ceiling value (c), which may not be exceeded during any part of the working exposure.

- IDLH: The maximum airborne concentration of a substance which one could escape within 30 minutes without escape-impairing symptoms or any irreversible health effects.

Table 1-4 presents occupational exposure limits and general toxicological information for the site contaminants, including-OSHA PELs, NIOSH RELs, ACGIH TLV/TWAs, and IDLH values. Alternate workplace standards recommended in publications related to workplace exposure criteria, such as the Threshold Limit Values and Biological Exposure Indices by the American Conference of Governmental Industrial Hygienists, shall be used in lieu of OSHA standards where OSHA standards are less stringent or do not exist.

2.13.2 Biological Hazards

Potential biological hazards at hazardous waste sites may consist of snakes, spiders, ticks, fleas, poisonous plants, and hantavirus.

Spiders, snakes, and fleas exist in cool, dark, moist areas. The potential for encounters exist when reaching into dark, covered places. Suggestions for control include using a long stick to break apart webs or loosen soil from certain areas. A flashlight should also be used when reaching into a dark area. Field personnel shall be aware of their surroundings and avoid contact with all insects.

Rattlesnakes and scorpions are indigenous to many parts of the United States. The On-site Safety Officer (OSO) will inform field team members at the daily tailgate safety meetings to be on the lookout for rattlesnakes and scorpions. It should be noted that the American Red Cross does not advocate the use of snake bite kits for snake bite injuries. Rather, experience has shown that the victim has a better chance of recovery without permanent damage when the site of the wound is immobilized and the victim rushed to the closest emergency medical facility (preferably within 30 minutes).

Hantavirus has resulted in several deaths in the southwestern part of the United States. While there may not have been any outbreaks or notices of the virus at a particular project site, field team members should be aware of the cause and potential control methods. Hantavirus has been shown to be transmitted through the aerosolization of dried rodent excreta. Hantavirus-associated disease begins with one or more symptoms including fever, muscle aches, headache, and cough and progresses rapidly to severe lung disease, often requiring intensive care treatment. To control potential contact with dust that may be carrying the rodent excreta, the field team will conduct a visual survey of the area around each site to note whether rodents are thriving in the area. If it is determined that rodents may be living near the work area, or the area is affected by wind blowing dust into the work area, dust suppression techniques and/or respiratory protection (dust mask or dual cartridge air purifying respirator with dust filters) will be required. The Center for Disease Control, in Atlanta Georgia, has established a hotline for inquiries regarding hantavirus: (800) 532-9929.

2.13.3 Radiological Hazards

When ionizing radiation hazards cannot be reasonably eliminated as a site hazard, a program for the recognition, evaluation and control of radiation hazards is presented in Section 1.0.

2.14 COMMON PHYSICAL HAZARDS AND CONTROLS

This section provides information concerning common physical hazards associated with hazardous waste operations and recommended controls to minimize risk to site personnel. Section 1.0 lists the hazards specific to this project.

2.14.1 Slip/Trip/Fall

All field team members are to be vigilant in providing clear footing, clearly identifying obstructions, holes, or other tripping hazards and maintaining an awareness of uneven terrain and slippery surfaces. Working at heights above six feet is not anticipated to be necessary during the course of most projects. If work at such heights is necessary for this project, a fall protection program will be documented in an addendum to this HASP.

2.14.2 Heavy Lifting

During manual lifting tasks, all personnel will remember to lift with the force of the load transferred to their legs, not their backs. They are to maintain a straight back and hold the object close to the body. Mechanical lifting devices or the help of a fellow field team member should be sought when the object is too heavy for one person to lift.

2.14.3 Electrical Hazards

The presence of underground and overhead utilities must be assessed before any field work involving heavy equipment with booms or extensions, or invasive work is permitted. An underground utility service in conjunction with a review of as-built construction drawings will identify and locate all utilities prior to invasive activities. Invasive activities must be at least five feet away from marked underground utilities. In all cases, personnel will be vigilant about the presence of overhead lines before raising the mast of a drill rig, a backhoe bucket, or a crane arm. Generally, clearances of 20 feet or more are recommended. Minimum distances from mast to overhead electrical lines, based on voltage, are as follows:

Nominal Power Line System (kV)	Minimum Required Clearance (feet)
0–50	10
51–100	12
101–200	15
201–300	20
301–500	25
501–750	35
751–1,000	45

Source: United States Army Corps of Engineers

Other electrical hazards include temporary office power supply, generators, and lightning. Field personnel are responsible for ensuring that equipment brought to the work site is grounded before use. Additionally, the use of ground-fault circuit interrupters are required for all portable electrical tools and fixed electrical equipment to be used at the site.

2.14.4 Motor Vehicle Hazards

Motor vehicle accidents can occur any time people drive. All field staff are required to employ defensive driving techniques and obey all client site speed limits and vehicle safety requirements. All accidents are to be reported to the MWH OSO.

2.14.5 Hot Work Permits

Any welding, torch cutting or other “hot work” will be performed in accordance with any client-specific hot work permit procedures. Otherwise, all hot work must be done with the prior knowledge of the MWH OSO and a fire watch with a suitable fire extinguisher will be maintained.

2.14.6 Sharp Edges and Pinch Points

During the course of the field work, it is possible that personnel will encounter sharp edges and pinch points. Sharp objects may include site debris, field tools, equipment, or other objects. Pinch points are places where the hands may be caught between objects or moving parts. When danger of cuts to the hands or other body parts is probable, employees will either arrange paths where personnel may walk free of sharp edges, or ensure during the tailgate safety meeting that areas with known sharp edges are brought to the attention of the entire field crew. Heavy work gloves shall be used in conjunction with any chemical resistant gloves when handling sharp objects is required.

TABLES

TABLE 1-1

TOXICITY INFORMATION FOR CHEMICALS OF CONCERN (COC)
(Page 1 of 3)

Contaminant	OSHA PEL	NIOSH REL	ACGIH TLV	ACGIH/OSHA STEL	OSHA/ NIOSH IDLH	IP eV	Vapor Pressure (mm Hg)	Route of Exposure	Symptoms of Exposure
DUST, TOTAL	15 mg/m3	NA	NA	NA	NA	Depends on compound	Depends on compound	INH, CON	Nuisance, may cause sneezing or itchy eyes.
DUST, RESPIRABLE	5 mg/m3	NA	NA	NA	NA	Depends on compound	Depends on compound	INH, CON	Nuisance, may cause sneezing, coughing, or itchy eyes.
PRECIPITATOR DUST	15 mg/m^3 (total) 5 mg/m^3 (respirable)	ND	10 mg/m^3 (total) 3mg/m^3 (respirable)	ND	ND	NA	NA	INH, CON	Irritation to eyes, skin and upper respiratory system.

TABLE 1-1

TOXICITY INFORMATION FOR CHEMICALS OF CONCERN (COC)
(Page 2 of 3)

Contaminant	NRC Oral Ingestion ALI (uCi)	NRC Inhalation ALI (uCi)	NRC Inhalation DAC (uCi)	NRC Air Effluent Concentration (uCi/ml)	NRC Water Effluent Concentration (uCi/ml)	Route of Exposure	Additional Information
RADIUM-226	2E+0 (Bone Surface) 5E+0	6E-1	3E-10	9E-13	6E-8	INH, ING, CON	CARCINOGEN
LEAD-210	6E-1 (Bone Surface) 1E+0	2E-1 (Bone Surface) 4E-1	1E-10	6E-13	1E-8	INH, ING, CON	CARCINOGEN
URANIUM-238	1E+1 (Bone Surface) 2E+1	1E+0 (Bone Surface) 2E+0	6E-10	3E-12	3E-7	INH, ING, CON	CARCINOGEN

Key:
% – percent
ALI – Annual Limits on Intake
A1 – ACGIH notation for a confirmed human carcinogen.
ABS – Absorption
ACGIH – American Conference of Governmental Industrial Hygienists
Ca – Carcinogen.
Con – Contact
DAC – Derived Acceptable Concentration

TABLE 1-1

TOXICITY INFORMATION FOR CHEMICALS OF CONCERN (COC)
(Page 3 of 3)

IDLH – Immediately Dangerous to Life and Health.
Ing – Ingestion
Inh – Inhalation
LFT – Lowest Feasible Concentration
mg/m^3 – milligrams per cubic meter
NIOSH – National Institute for Occupational Safety and Health.
NL – Not Listed.
NRC – Nuclear Regulatory Commission
OSHA – Occupational Safety and Health Administration.
PEL – Permissible Exposure Limit (8-hour TWA).
ppm – parts per million
REL – Recommended Exposure Limit.
ST- Designated STEL preceding the value
STEL- Short Term Exposure Limit (15-minute TWA).
TLV – Threshold Limit Value.
TWA – Time–Weighed Average.

TABLE 1-2
JOB HAZARD ANALYSIS
FMC POCATELLO, IDAHO
(page 1 of 2)

ANALYZED BY/DATE Rob Young 08/03/09
REVIEWED BY/DATE: Leah Wolf Martin 08/05/09

PRINCIPAL STEPS	POTENTIAL HAZARDS	RECOMMENDED CONTROLS
1. Locating sample locations using GPS equipment. 2. Surface soil sampling using a scoop. 3. Decontamination of sampling equipment. 4. Mobilization and demobilization to and from on-site compositing location.	Chemical/Toxicological Hazards 1. Possibility of exposure to radionuclide's and metals and possibility of exposure to metals and pathogens in City of Pocatello's land application areas (DUs 1, 2, and 3). Biological Hazards 1. Slight possibility of wild animals 2. Sting and biting insects 3. Poisonous plants. Physical Hazards 1. Contact with overhead obstructions 2. Slip/trip/fall 3. Thermal stress (hot or cold depending on time of year) 4. Heavy lifting 5. Being struck by vehicles	Chemical/Toxicological Hazards 1. Dust monitoring using visual observations. 2. Level D PPE with upgrading or downgrading pending observed site conditions and monitoring results. 3. Follow hygiene procedures (hand washing, avoidance of eating, smoking, drinking in exclusion zones). Biological Hazards 1. Avoid physical contact with wild animals, plants and insects. Do not threaten or corner animals. Make noise to get the animal to retreat. Stay in or return to vehicle or equipment. 2. Use of appropriate insect repellants. For ticks use over boots or tuck pants into socks. Use of long pants and shirt with long sleeves. Physical Hazards 1. Watch where you step, be aware of uneven terrain. Keep footwear and work area free of mud and drilling fluids. Maintain 3 points of contact when mounting and dismounting drill rig or backhoe. 2. Refer to SSHP Section 2.11 for a thorough discussion on thermal stress and severe weather. 3. When lifting, be sure to size up the load, get assistance when possible and follow proper lifting techniques. If possible use sling or strap while handling augers. 4. If visible dust is present work up wind from any activities that produce dust. If site workers are unable to move upwind, engineering controls may be required. If warranted, based on field conditions and monitoring, half or full faced respirators may be required as discussed in the HASP.

TABLE 1-2
JOB HAZARD ANALYSIS
FMC POCATELLO, IDAHO
(page 2 of 2)

EQUIPMENT TO BE USED	INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS
1. Soil sampling equipment and hand tools. 2. Vehicles	Safety Inspections The Site Safety Officer will conduct daily site safety inspections. Motor Vehicles 1. Before initial use vehicles will be inspected by a mechanic and found in safe operating conditions. 2. When any equipment is brought onto site they will be inspected and will be in good working conditions. Equipment 1. Before equipment is placed in use it will be inspected and tested by a competent person. 2. All equipment/tools will be inspected daily (when in use) to ensure safe operating conditions. A designated competent person will conduct the daily inspections or test. 3. Defective equipment shall not be used and will be immediately replaced.	Site Specific 1. HAZWOPER training required (both 40-hour and current on 8-hour refresher). 2. Site specific training. 3. Daily tailgate safety meetings. 4. IDW handling and storage training required. 5. Hazard Communications training for hazardous substances brought onto the job site. Supervisor Personnel 1. First Aid and CPR 2. Minimum HAZWOPER. 8-hr Supervisor recommended. Equipment General Employees will be qualified and trained to operate or service mechanical equipment.

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JOB HAZARD ANALYSIS
FMC POCATELLO, IDAHO
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TABLE 1-2
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FMC POCATELLO, IDAHO
(page 2 of 2)

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TABLE 2-1

EMERGENCY SUPPLIES
(Page 1 of 1)

FIRST AID SUPPLIES

Container that will ensure that all supplies are kept clean and sanitary.
Aspirin or non-aspirin substitute
Eye drops
Burn spray or ointment
Cold spray or other topical anesthesia
Antiseptic spray, cream or ointment
Hydrogen peroxide 3% solution
Bandaids: knuckle bandaid, elastic strips (3" x 7/8"), adhesive bandage (3" x 3/4"), finger tip (2" x 1 3/4")
Triangle bandage and safety pins
Gauze bandages: 2 and 4 square pads and 1, 2, and 4 inch rolls or compresses
First aid tape
Ace bandage
Clean wipes
Antiseptic hand cleaner
Sterile water
Antiseptic swabs
Eye dressing packet
Pressure dressings
Instant ice packs
Cotton balls
Scissors and tweezers
Latex gloves
CPR barricade, to prevent mouth to mouth contact
Tourniquet and forceps
S.A.M. – moldable splint
Ammonia inhalant
First aid guidebook
Blankets (mylar)
Burn sheet
Plastic sheeting, to be used for wrapping a contaminated victim

OTHER EMERGENCY SUPPLIES

Emergency eyewash station capable of delivering 15 minutes of uninterrupted flow
Flashlight
Potable Water
Stokes stretcher
Tripod with winch, extraction lanyard and harness
Ladders (aluminum, wood or rope, as necessary)
10-minute escape breathing apparatus
Traffic control/safety devices (traffic vests, cones, flares)
Fire extinguishers (10 pound ABC minimum)
Water hoses
Spill absorbent
Rope
Spare shovels and tools
Two-way radios

TABLE 2-2

EQUIPMENT NEEED TO PERFORM MAXIMUM DECONTAMINATION MEASURES FOR LEVELS A, B, C, AND D
(Page 1 of 1)

Station	Item
Station 1:	a. Various sized containers b. Plastic liners c. Plastic drop cloths
Station 2:	a. Containers (20-30 gallons) b. Decon solution or detergent water c. 2-3 Long-handled, soft-bristled scrub brushes
Station 3:	a. Containers (20-30 gallons) b. Water c. 2-3 Long-handled, soft-bristled scrub brushes
Station 4:	a. Containers (20-30 gallons) b. Plastic liners
Station 5:	a. Containers (20-30 gallons) b. Plastic liners c. Benches or stools
Station 6:	a. Containers (20-30 gallons) b. Plastic liners
Station 7:	a. Containers (20-30 gallons) b. Decon solution or detergent water c. 2-3 Long-handled soft-bristled scrub brushes
Station 8:	a. Containers (20-30 gallons) b. Water c. 2-3 Long-handled soft-bristled scrub brushes
Station 9:	a. Air tanks or face masks and cartridge depending on level b. Tape c. Boot covers d. Gloves
Section 10:	a. Containers (20-30 gallons) b. Plastic liners c. Benches or stools d. Boot jack
Section 11:	a. Rack b. Drop cloths c. Bench or stools
Section 12:	a. Table
Section 13:	a. Basin or bucket b. Decon solution c. Small table
Station 14:	a. Water b. Basin or bucket c. Small table
Station 15:	a. Containers (20-30 gallons) b. Plastic liners
Station 16:	a. Containers (20-30 gallons) b. Plastic liners
Station 17:	a. Containers (20-30 gallons) b. Plastic liners
Station 18:	a. Water b. Soap c. Small table d. Basin or bucket e. Field showers f. Towels
Station 19:	a. Dressing trailer is needed in inclement weather b. Tables c. Chairs d. Lockers e. Cloth

TABLE 2-3

EQUIPMENT NEEDED TO PERFORM MINIMUM DECONTAMINATION MEASURES FOR LEVELS A, B, C, AND D
(Page 1 of 1)

Station	Item
Station 1:	a Various size containers
	b. Plastic liners
	c. Plastic drop cloths
Station 2:	a. Containers (20-30 gallons)
	b. Decon solution
	c. Rinse water
	d. 2-3 Long-handled, soft-bristled scrub brushes
Station 3:	a. Containers (20-30 gallons)
	b. Plastic liners
	c. Bench or stools
Station 4:	a. Air tanks or masks and cartridges depending upon level
	b. Tape
	c. Boot covers
	d. Gloves
Station 5:	a. Containers (20-30 gallons)
	b. Plastic liners
	c. Bench or stools
Station 6:	a. Plastic sheets
	b. Basin or bucket
	c. Soap and towels
	d. Bench or stools
Station 7:	a. Water
	b. Soap
	c. Tables
	d. Wash basin or bucket

TABLE 2-4

MAXIMUM MEASURES FOR LEVELS A, B, C AND D DECONTAMINATION
(Delete any steps unnecessary for Level D)
(Page 1 of 1)

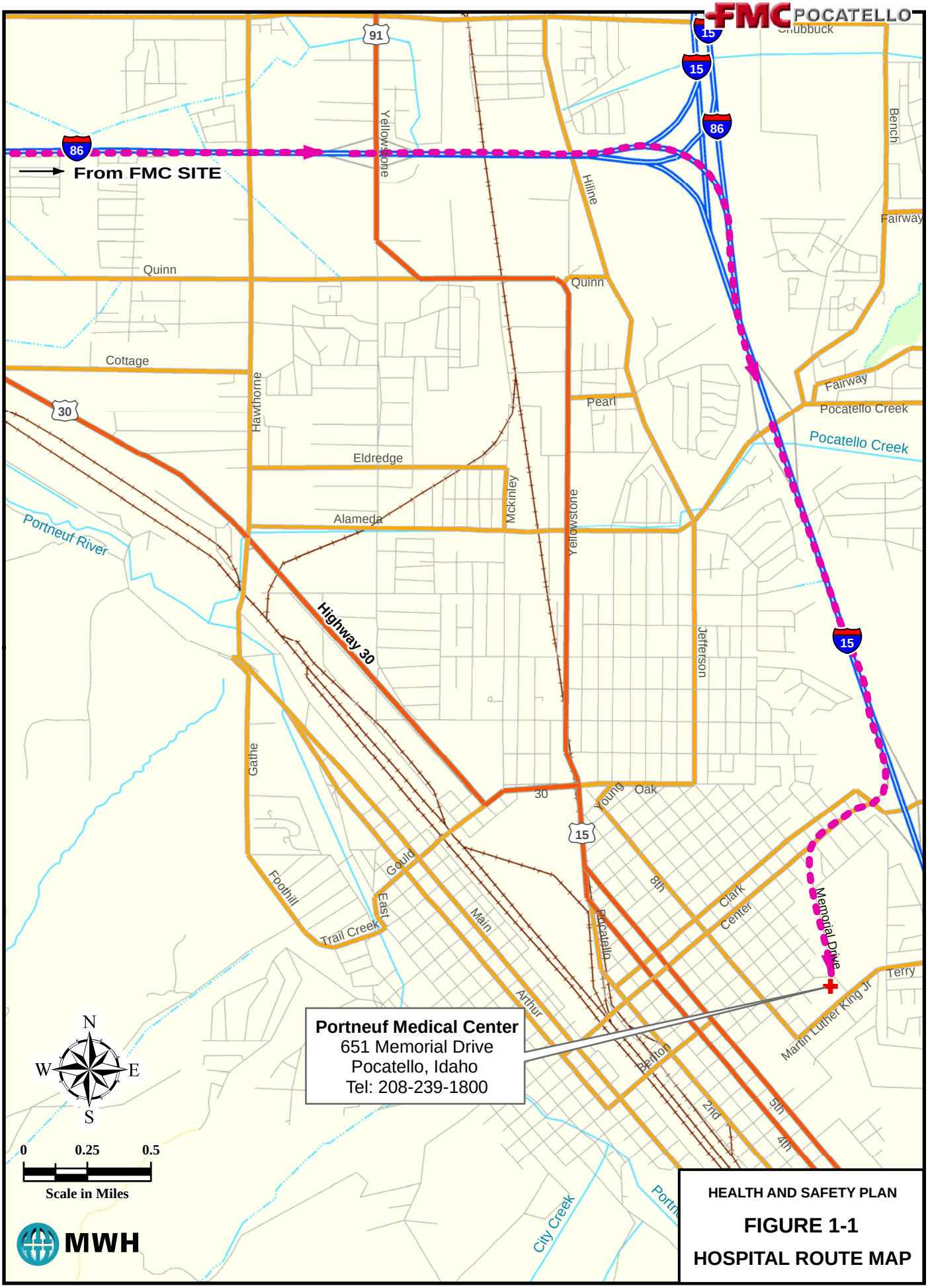
Station	Purpose	Procedure
Station 1:	Segregated Equipment Drop	Deposit equipment used on-site (tools, sampling devices and containers, monitoring instruments, radios, clipboards, etc.) on plastic drop cloths or in different containers with plastic liners. During hot weather operations, a cool-down station may be set up within this area.
Station 2:	Boot Covers and Glove Wash	Scrub outer boot covers and gloves with decon solution or detergent/water.
Station 3:	Boot Cover and Glove Rinse	Rinse off decon solution from Station 2 using copious amounts of water.
Station 4:	Tape Removal	Remove tape around boots and gloves and deposit in container with plastic liner.
Station 5:	Boot Cover Removal	Remove boot covers and deposit in container with plastic liner.
Station 6:	Outer Glove Removal	Remove outer gloves and deposit in container with plastic liner.
Section 7:	Suit and Boot Wash	Wash encapsulating suit and boots using scrub brush and decon solution or detergent/water. Repeat as many times as necessary.
Section 8:	Suit, Boot, and Glove Rinse	Rinse off decon solution using water. Repeat as many times as necessary.
Section 9:	Air Tank, Cartridge, Mask, or Canister Change	If an air tank, cartridge, mask or canister change is desired, this is the last step in the decontamination procedure. Air tank is exchanged, new outer gloves and boot covers are donned, and joints are taped. Worker returns to duty.
Section 10:	Safety Boot Removal	Remove safety boots and deposit in container with plastic liner.
Section 11:	Suit and Hard Hat Removal	Suit is removed with assistance of a helper and is laid out on a drop cloth or hung up. Hard hat is removed. Hot weather rest station may be set up within this area for personnel returning to site.
Section 12:	SCBA Backpack Removal	If in Level C or D, go to next Station. While still wearing facepiece, remove backpack and place on table. Disconnect hose from regulator valve and proceed to next station.
Section 13:	Inner Glove Wash	Wash with decon solution that will not harm the skin. Repeat as often as necessary.
Section 14:	Inner Glove Rinse	Rinse with water. Repeat as many times as necessary.
Section 15:	Face Piece Removal	Remove facepiece. Deposit in container with plastic liner. Avoid touching face with fingers.
Section 16:	Inner Glove Removal	Remove inner gloves and deposit in container with liner.
Section 17:	Inner Clothing Removal	Remove clothing and place in lined container. Do not wear inner clothing off-site since there is a possibility that small amounts of contaminants might have been transferred in removing the fully-encapsulating suit.
Station 18:	Field Wash	Shower if highly toxic, skin-corrosive or skin-absorbable materials are known or suspected to be present. Wash hands and face if shower is not available.
Station 19:	Redress	Put on clean clothes.

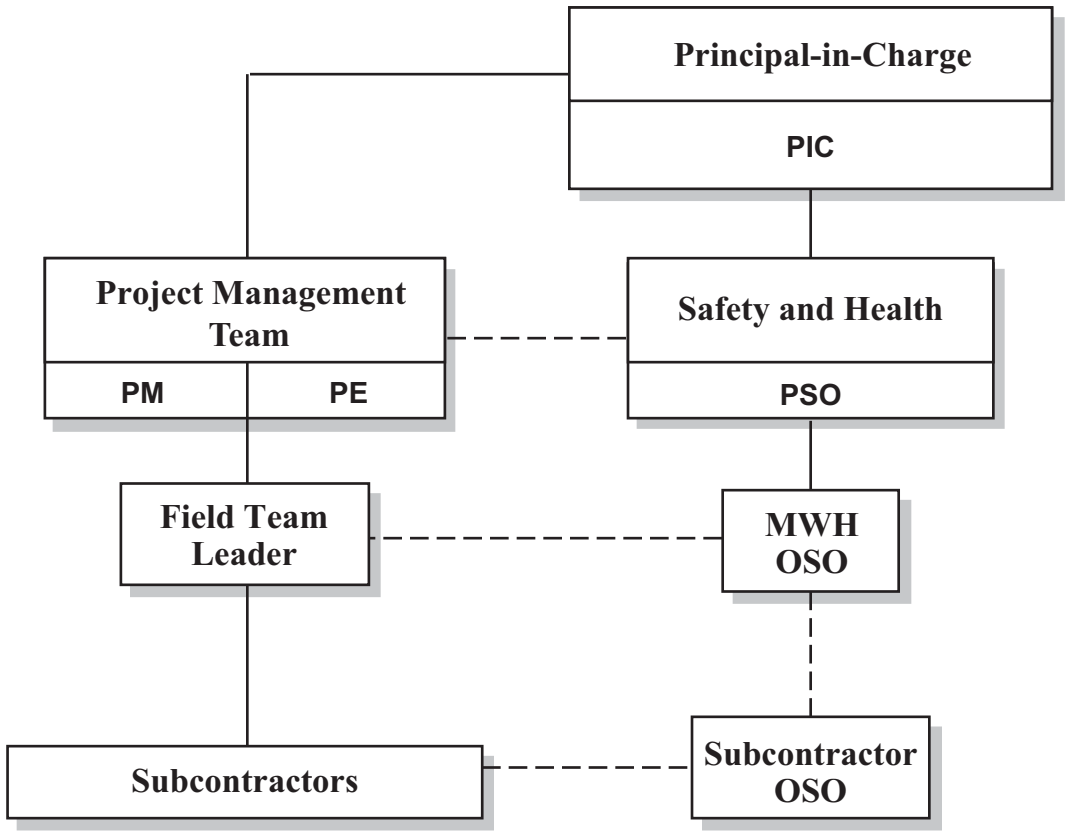
TABLE 2-5

MINIMUM MEASURES FOR LEVELS A, B, C AND D DECONTAMINATION
(Delete any steps unnecessary for Level D)
(Page 1 of 1)

Station	Purpose	Procedure
Station 1:	Equipment Drop	Deposit equipment used on-site (tools, sampling devices and containers, monitoring instruments, radios, clipboards, etc.) on plastic drop cloths. Segregation at the drop reduces the probability of cross contamination. During hot weather operations, cool-down stations may be set up within this area.
Station 2:	Outer Garment, Boots, and Gloves Wash and Rinse	Scrub outer gloves and fully-encapsulating suit with decon solution or detergent and water. Rinse off using copious amounts of water.
Station 3:	Outer Boot and Glove Removal	Remove outer boots and gloves. Deposit in container with plastic liner.
Station 4:	Tank, Cartridge, Mask or Canister Change	If worker leaves Exclusion Zone to change air tank, cartridge, mask or canister, this is the last step in the decontamination procedure. Worker's air tank, cartridge, mask or canister is exchanged, new outer gloves and boot covers are donned, joints are taped, and worker returns to duty.
Station 5:	Boot, Gloves, and Outer Garment Removal	Boots, fully-encapsulating suit, and inner gloves are removed and deposited in separate containers lined with plastic.
Station 6:	Respirator Removal	Respirators are removed (avoid touching face with fingers). Respirator is deposited on plastic sheets.
Station 7:	Field Wash	Hands and face are thoroughly washed. Shower as soon as possible.

FIGURES

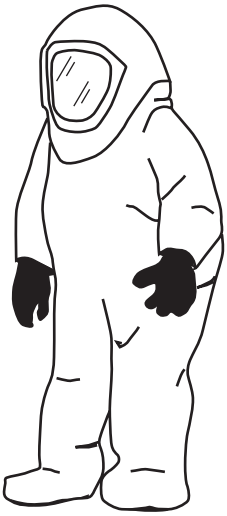

FMC POCATELLO
From FMC SITE
Portneuf Medical Center
651 Memorial Drive
Pocatello, Idaho
Tel: 208-239-1800
Highway 30
Portneuf River
Pocatello Creek
City Creek
Quinn
Cottage
Eldredge
Alameda
Pearl
Fairway
Bench
Hiline
Yellowstone
Hawthorne
Mckinley
Jefferson
Gathe
Foothill
Trail Creek
East
Gould
Main
Arthur
Pocatello
8th
Clark
Center
Memorial Drive
Martin Luther King Jr
Terry
Belton
2nd
4th
5th
Young
Oak
Chubbuck
N
S
E
W
0
0.25
0.5
Scale in Miles
MWH
HEALTH AND SAFETY PLAN
FIGURE 1-1
HOSPITAL ROUTE MAP
Fig 1-1_Hosp map_Feet_Statepl_Nad83_8x11.mxd 06/08/07 SLC



PIC – Principal in Charge
PM – Project Manager
PE – Project Engineer
PSO – Project Safety and Health Officer
OSO – Onsite Safety Officer

——— Line of authority
– – – Line of communtication

Figure 2-1: Site Safety Responsibility Chart



Level A Protection
Totally encapsulating vapor-tight suit with full-facepiece SCBA or supplied-air respirator.

Level B Protection
Totally encapsulating suit does not have to be vapor tight. Same level of respiratory protection.

Level C Protection
Full-face canister air purifying respirator. Chemical protective suit with full body coverage.

Level D Protection
Basic work uniform, i.e. longsleeve coveralls, gloves, hardhat, boot, faceshield or goggles.

PROJECT NO. 1004931.010604 Fig 2-2 Protective equip.ai 03/06/02 SLC

Figure 2-2: Sample Protective Equipment Ensembles

APPENDIX A

INJURY AND ILLNESS PREVENTION PROGRAM

APPENDIX B

PERSONAL ACKNOWLEDGMENT FORM

PERSONAL ACKNOWLEDGMENT FORM

HEALTH AND SAFETY PROGRAM

_____

PROJECT NAME/SITE

As a component of the MWH Health and Safety Program (which includes Site Specific Health and Safety Plans) designed to provide personnel safety during hazardous waste site operations, you are required to read and understand the entire Health and Safety Program (HASP) for this project. Upon completion of reading and understanding this document, please sign and date this personal acknowledgment form and return it to the On-Site Safety Officer.

_____ _____

Signature Name (Printed)

_____

Date

APPENDIX C

TAILGATE SAFETY MEETING FORM

TAILGATE SAFETY MEETING FORM

Date:_____ **Time:**_____ **Job Number:**_____
Client:_____ **Address:**_____
Site Location:_____
Scope of Work:_____
Today's Tasks:_____

SAFETY TOPICS PRESENTED

Chemical Hazards:

1. Chemicals of concern:_____
_____
2. Warning properties:_____
3. PPE needed:_____
_____

Physical Hazards:

1. Equipment dangers.
2. Pinch.
3. Heat/cold stress.
4. Vehicle traffic hazards.
5. Slip, trip, and fall hazards.
6. Mechanical and electrical hazards.
7. Noise hazards.
8. Other:_____
9. Work limitations (temperature, weather conditions, light):_____
_____

Monitoring:

1. Equipment to be used:_____
2. Chemical/physical hazards being monitored:_____
3. Action levels for upgrading/evacuating:_____
_____
4. Frequency of readings/logging in field book:_____

Special Equipment:_____

Decontamination of Clothing/Equipment:

1. Decontamination solutions used (applicable MSDSs on site):_____
_____
2. Disposal of clothing/supplies:_____

Site Control:

1. Location of work zones:_____
2. PPE needed in each zone:_____

Other:

1. No smoking, eating, or drinking in work areas.
2. Injury and Illness Prevention Program (IIPP).
3. _____

Emergency Procedures:

1. Location of emergency equipment:_____
2. Designated safety vehicle:_____
3. Emergency procedures:_____
4. Posted emergency information, route to hospital map, and chemical symptoms table.

ATTENDEES

Name Printed	**Signature**
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Meeting Conducted By:_____ _____
Name Printed Signature

Project Safety Officer:_____ **Project Manager:**_____

APPENDIX D

ACCIDENT/INCIDENT/NEAR MISS REPORTING

PROCEDURES AND FORMS

OCCUPATIONAL INCIDENT REPORT FORM

MWH

EMPLOYEE INFORMATION (Electronically, double click to the left of the box, click checked under default value)

NAME	DATE OF REPORT
OFFICE ADDRESS	OFFICE PHONE
MWH EMPLOYEE (If not MWH employee provide company, address, phone) ☐ YES ☐ NO	BUSINESS UNIT

JOB TITLE	HIRE DATE	BIRTHDATE	SOCIAL SECURITY NO.	GENDER ☐ M ☐ F

SUBCONTRACTOR INVOLVED (If yes, provide company, address, phone)
☐ YES ☐ NO

INCIDENT INFORMATION

LOCATION (Name of facility or location identification, address, specific site)

DATE AND TIME INCIDENT OCCURRED	EMPLOYEE's WORK SCHEDULE ON DATE OF INCIDENT

TYPE OF INCIDENT:
☐ INJURY ☐ ILLNESS
☐ PROPERTY DAMAGE ☐ NEAR MISS
☐ OTHER INCIDENT

What was the employee doing just before the incident occurred? Describe the activity, as well as the tools, equipment, or material the employee was using. Be specific. Examples: *climbing a ladder while carrying roofing materials; daily computer key-entry.*

What happened? Tell us how the injury occurred. Examples: *when ladder slipped on wet floor, worker fell 4 feet; worker developed soreness in wrist over time.*

What was the injury or illness? Tell what part of the body was affected and how it was affected. Be more specific than "hurt," "pain," or "sore." Examples: *strained back; carpal tunnel syndrome.*

What object or substance directly harmed the employee? Example: *concrete floor; radial arm saw.*

OCCUPATIONAL INCIDENT REPORT FORM

INJURY/ILLNESS TREATMENT INFORMATION

INJURY/ILLNESS TREATMENT:

☐ NOT APPLICABLE ☐ ON-SITE FIRST AID ☐ OFFERED & REFUSED

☐ OFF-SITE (If checked, list name of physician or other health care professional/facility, address, phone)

Was employee treated in an emergency room?	☐ YES	☐ NO	
Was employee hospitalized as an in-patient?	☐ YES	☐ NO	
Was this a fatality?	☐ YES	☐ NO	Date of death_____

WITNESS STATEMENTS ATTACHED: ☐ YES ☐ NO

Witness Names:

ANALYSIS OF CAUSES AND CORRECTIVE ACTIONS

WHAT CONDITIONS OR ACTIONS CAUSED OR CONTRIBUTED TO THE INCIDENT?

CORRECTIVE ACTIONS TAKEN OR RECOMMENDED (Describe):

DISTRIBUTION

(Supervisor and Business Unit Manger Print & sign name; Original is forwarded to ES&H DEN-2)

1. EMPLOYEE or INDIVIDUAL REPORTED BY:	2. EMPLOYEE's DIRECT SUPERVISOR:
3. BUSINESS UNIT MANAGER:	4. HEALTH AND SAFETY: Clayton Bock CHI-4 Worker's Compensation Dept. Telephone: 312-952-4236 Heather Medina 303-533-1991 Emergency Only 866-469-4456 Woni Steven 303-410-4114 OSHA Log Case Number _____

Note: *Attach additional sheets as necessary to document incident.*

APPENDIX E

OSHA JOB SAFETY AND HEALTH PROTECTION POSTER

You Have a Right to a Safe and Healthful Workplace.

IT'S THE LAW!

- ❑ You have the right to notify your employer or OSHA about workplace hazards. You may ask OSHA to keep your name confidential.
- ❑ You have the right to request an OSHA inspection if you believe that there are unsafe and unhealthful conditions in your workplace. You or your representative may participate in the inspection.
- ❑ You can file a complaint with OSHA within 30 days of discrimination by your employer for making safety and health complaints or for exercising your rights under the *OSH Act.*
- ❑ You have a right to see OSHA citations issued to your employer. Your employer must post the citations at or near the place of the alleged violation.
- ❑ Your employer must correct workplace hazards by the date indicated on the citation and must certify that these hazards have been reduced or eliminated.
- ❑ You have the right to copies of your medical records or records of your exposure to toxic and harmful substances or conditions.
- ❑ Your employer must post this notice in your workplace.

The *Occupational Safety and Health Act of 1970 (OSH Act),* P.L. 91-596, assures safe and healthful working conditions for working men and women throughout the Nation. The Occupational Safety and Health Administration, in the U.S. Department of Labor, has the primary responsibility for administering the *OSH Act.* The rights listed here may vary depending on the particular circumstances. To file a complaint, report an emergency, or seek OSHA advice, assistance, or products, visit our website at www.osha.gov or call 1-800-321-OSHA or your nearest OSHA office:

Atlanta (404) 562-2300	Boston (617) 565-9860	Chicago (312) 353-2220	Dallas (214) 767-4731
Denver (303) 844-1600	Kansas City (816) 426-5861	New York (212) 337-2378	Philadelphia (215) 861-4900
San Francisco (415) 975-4310	Seattle (206) 553-5930	Teletypewriter (TTY) 1-877-889-5627	

If you work in a state operating under an OSHA-approved plan, your employer must post the required state equivalent of this poster.

1-800-321-OSHA

OSHA Occupational Safety and Health Administration

www.osha.gov U.S. Department of Labor

OSHA 3165-09R